APPENDIX A

Boring Logs and Well Construction Logs from Monitoring Wells Installed within Groundwater Model Study Area.

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Soil Boring and Monitoring Well Construction Log

MW-11R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3015-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	0.01"
Date Started - Completed:	02/22/11 - 02/25/11	**Casing Interval:**	See Comments
Top of Pad Elevation:	92.06	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	1: 91.67; 2: 91.69; 3: 91.70	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	135'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flush Mount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	17'
Inspector:	P. Phillips	**Depth to Bedrock:**	Weathered rock at 130'

Comments: 8" boring to a depth of 33 ft. 7" boring to a depth of 50 ft, 6" boring to a depth of 135 ft. Screened intervals for 3 nested wells are: MW11R-1 = 10-33 ft, MW11R-2 = 40-50 ft, MW11R-3 = 60-130 ft. MW11R is located adjacent to the entrance of the WMATA rail yard and is finished with heavy duty flush mount manhole construction.

Depth ('bgs)	Method	Recovery (%)	PID (ppm)	USCS	Description
	Rotasonic		0.0	ML	(0-3.5') Medium brown silt with some gravel, some quartzite cobbles and light brown silt inclusions.
			0.0		
			0.0		
			0.0	SP	(3.5-5') Light brown and orange-brown fine sand with silt.
			0.0		
5		100	0.0		(5-9') Orange brown, light brown and reddish-brown fine sand intermixed with fine to coarse gravel and silt.
			0.0		
			0.0		
			0.0		
			0.0		
10			0.0		(9-15') Orange-brown sand and gravel with trace silt.
			0.0		
			0.0		
			0.0		
			0.0		
15		100	0.0		
			0.0	SW	(15-17') Orange brown sand (m-c) with gravel and trace silt. Light brown silt inclusions.
			0.0		(17-18') Light brown sand & compact silt. Moist.
			0.0		(18-20') Light brown medium to coarse sand with compat silt. Moist.
20			0.0		
			0.0		(20-21') Or-br sand (m-c) w/ trace gr & silt.
			0.0	SP	(21-23') Orange-brown coarse sand with some gravel and trace silt.
			0.0		
			0.0	MH	(23-23.5') Very light gray compact silt.
			0.0	SP	(23.5-31') Light orange-brown coarse sand with trace shell fragments.
25		100	0.0		
			0.0		
			0.0		
			0.0		
			0.0		Cobbles at 28'.
			0.0		3 inch layer of red-brown coarse sand and sandstone cobble at 31'.
30			0.0		
			0.0		(31-33') Light orange-brown and light brown coarse sand with gravel and trace silt.
		100	0.0		
			0.0		
			0.0	SW	(33.5-35') Lt br sand w/ orange to red clayey silt.

Lithology | Screen Pack/ Grout Seal | Well Construction 1 2 3

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Soil Boring and Monitoring Well Construction Log

MW-11R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter**:	8", 7", 6"
Project Number:	3015-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	0.01"
Date Started - Completed:	02/22/11 - 02/25/11	**Casing Interval**:	See Comments
Top of Pad Elevation:	92.06	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	1: 91.67; 2: 91.69; 3: 91.70	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	135'	**Grout Interval**:	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flush Mount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	17'
Inspector:	P. Phillips	**Depth to Bedrock:**	Weathered rock at 130'

Comments: 8" boring to a depth of 33 ft. 7" boring to a depth of 50 ft, 6" boring to a depth of 135 ft. Screened intervals for 3 nested wells are: MW11R-1 = 10-33 ft, MW11R-2 = 40-50 ft, MW11R-3 = 60-130 ft. MW11R is located adjacent to the entrance of the WMATA rail yard and is finished with heavy duty flush mount manhole construction.

Depth ('bgs)	Method	Recovery (%)	PID (ppm)	USCS	Description
35	Rotasonic	100	0.0	MH	(33.5-35') Dark gray compact silt. Dry.
			0.0		(35-37') Light brown clayey compact silt. Dry. Intermixed with angular gravel (f-m).
			0.0		
			0.0		(37-40.5') Light brown compact silt with fine sand. Dry.
			0.0		
			0.0		
40		100	0.0	GW	(40.5-42.5') Fine to coarse quartzite gravel and cobbles with trace sand and silt. Wet.
			0.0		
			0.0		
			0.0	SW	(42.5-45') Fine to coarse sand with trace gravel, sil and shell fragments.
			0.0		
45		100	0.0	GW	(45-48') Fine to coarse gravel with cobbles and fine to coarse sand with trace silt.
			0.0		
			0.0		
			0.0	SP	(48-50') Fine sand and compact silt with trace gravel. Clayey silt inclusions.
50			0.0		
		100	0.0		(50-50.2') Lt gray sand (f) w/ compact silt.
			0.0	MH	(50.2-52') Lt gray comp silt w/ tr orange-br silt.
			0.0		(52-57.5') Light gray compact silt. Dry.
			0.0		
			0.0		
55			0.0		
			0.0		
			0.0		(57.5-60') Light gray fine sand intermixed with reddish-brown and orange-brown sand. Wet.
			0.0		
			0.0		
60			0.0		
		100	0.0	SP	(60-66') Light gray fine sand with some silt. Moist.
			0.0		
			0.0		
			0.0		Several inches of compact silt at 64'
			0.0		
65			0.0		
			0.0		
			0.0		(66-68') Reddish-brown fine sand and compact silt
			0.0		

Lithology

Screen Pack/ Grout Seal

Well Construction 1 2 3

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Soil Boring and Monitoring Well Construction Log

MW-11R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter**:	8", 7", 6"
Project Number:	3015-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	0.01"
Date Started - Completed:	02/22/11 - 02/25/11	**Casing Interval**:	See Comments
Top of Pad Elevation:	92.06	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	1: 91.67; 2: 91.69; 3: 91.70	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	135'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flush Mount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	17'
Inspector:	P. Phillips	**Depth to Bedrock:**	Weathered rock at 130'

Comments: 8" boring to a depth of 33 ft. 7" boring to a depth of 50 ft, 6" boring to a depth of 135 ft. Screened intervals for 3 nested wells are: MW11R-1 = 10-33 ft, MW11R-2 = 40-50 ft, MW11R-3 = 60-130 ft. MW11R is located adjacent to the entrance of the WMATA rail yard and is finished with heavy duty flush mount manhole construction.

Depth ('bgs)	Method	Recovery (%)	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2 3
70	Rotasonic	100	0.0	SP	(68-70') Reddish-brown fine sand and compact silt			
			0.0					
			0.0	MH	(70-70.5') Compact silt with fine sand. Dry.			
		100	0.0	SP	(70.5-76') Light gray sand and silt with trace clay. Reddish-brown and orange-brown sand inclusions. Moist. Compact silt layers intermixed at 73'. (76-78') Light gray and orange-brown coarse sand at 76'.			
75			0.0					
			0.0					
			0.0					
			0.0					
			0.0					
			0.0					
			0.0					
			0.0		(78-79') Gray fine sand & compact silt. Dry.			
80			0.0	SW	(79-85') Light gray fine to coarse sand with silt. Moist.			
		100	0.0					
			0.0					
			0.0					
			0.0					
			0.0					
85			0.0					
			0.0		(85-92') Medium to coarse sand with some silt and light-brown silt inclusions.			
			0.0					
			0.0					
			0.0					
			0.0					
90			0.0					
		100	0.0					
			0.0					
			0.0		(92-102') Medium to coarse reddish-brown sand with some silt and light-brown silt inclusions. Trace shell fragments. Green and gray sand mottling at 97'.			
			0.0					
95			0.0					
			0.0					
			0.0		Orange-brown sand at 97.5'.			
			0.0					
			0.0					
			0.0					
100			0.0					
		100	0.0		Orange-brown sand at 101.5'. Quartzite gravel at 101.5-102'.			
			0.0					
			0.0		(102-104') Medium to coarse sand with some quartzite and sandstone gravel and trace silt.			

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Soil Boring and Monitoring Well Construction Log

MW-11R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter**:	8", 7", 6"
Project Number:	3015-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	0.01"
Date Started - Completed:	02/22/11 - 02/25/11	**Casing Interval**:	See Comments
Top of Pad Elevation:	92.06	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	1: 91.67; 2: 91.69; 3: 91.70	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	135'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flush Mount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	17'
Inspector:	P. Phillips	**Depth to Bedrock:**	Weathered rock at 130'

Comments: 8" boring to a depth of 33 ft. 7" boring to a depth of 50 ft, 6" boring to a depth of 135 ft. Screened intervals for 3 nested wells are: MW11R-1 = 10-33 ft, MW11R-2 = 40-50 ft, MW11R-3 = 60-130 ft. MW11R is located adjacent to the entrance of the WMATA rail yard and is finished with heavy duty flush mount manhole construction.

Depth ('bgs)	Method	Recovery (%)	PID (ppm)	USCS	Description
105	Rotasonic	100	0.0	SW	(104-105') Sand (f-c) and rounded quartzite gravel with trace silt.
			0.0		
			0.0		(105-107') Sand and quartzite gravel and cobbles with trace silt. Moist.
			0.0		
			0.0	MH	(107-108') Compact silt and sand (m-c).
110			0.0	SW	(108-111') Light brown sand (m-c) with white silt. Orange-brown sand stringer at 111'.
		100	0.0		
			0.0		(111-116') Fine to coarse sand with trace quartzite gravel (f-m) and trace silt. Some silt inclusions. Some quartzite cobbles at 115'.
			0.0		
			0.0		
115			0.0		
			0.0		
			0.0		(117-119') Fine to coarse sand with some silt and trace fine gravel.
			0.0	GW	(119-119.25') Gravel with sand and silt.
120			0.0	ML	(119.25-119.5') Silt, sand, and gravel.
			0.0	SW	(119.5-120.5') Sand (m-c) with silt and gravel.
			0.0	GW	(120.5-121.5') Org-br gravel w/ cobbles & sand.
			0.0	SW	(121.5-122.5') Lt br sand (m-c) w/ gr & tr silt.
			0.0	MH	(122.5-124.75') Compact gray silt with reddish-brown silt inclusions. Fine sand at 124.5'.
125		100	0.0		
			0.0	SW	(124.75-125') Lt-br & red-br sand w/ tr gr.
			0.0		(125-126') Med-brown sand w/ gravel & trace silt.
			0.0	GW	(126-127') Gravel (f-c) & cobbles w/ sand (f-c).
			0.0	SW	(127-128') Org-br sand & quartzite gr (f-c).
			0.0		(128-129') Red-br sand (f-c) w/ gr & some silt.
130			0.0	CL	(129-129.75') Very dark brown clay.
			0.0		Sand w/ silt, gravel, & cobbles @ 129.75'
		100	0.0		(129.75-135') Gray, micaceous weathered rock.
			0.0		
			0.0		
135					END OF SOIL BORING

Lithology | Screen Pack/ Grout Seal | Well Construction 1 2 3

BMT Entech

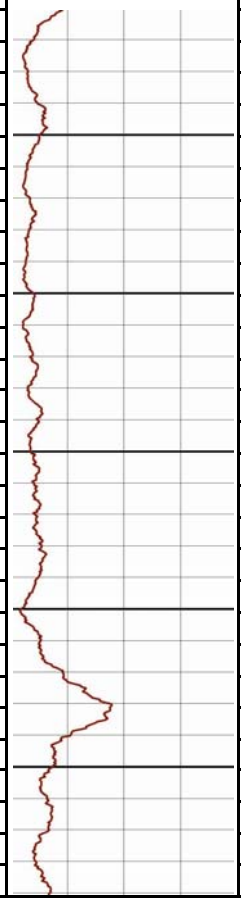
Soil Boring and Monitoring Well Construction Log

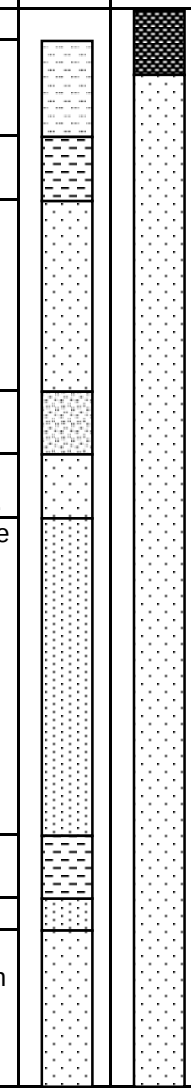
MW-15R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	6/28/10 - 06/29/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 156'. Final intervals for 3 nested wells are: MW15R-1 = 3-38ft, MW15R-2 = 40-85ft, MW15R-3 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
	0.0	NA	(0-6") Asphalt
	0.0	ML	(6"-4') Gray and dark gray silt with medium sand and clay. Moist
	0.0		
	0.0		
5	0.0	MH	(4-6') Medium brown compact silt with some fine to coarse gravel. Dry.
	0.0		
	0.0	SW-SM	(6-12') Medium brown, fine to medium sand with silt and some fine to coarse gravel (angular shale and rounded quartzite). Cobbles at 8'. Moist.
	0.0		
	0.0		
10	0.0		
	0.0		
	0.0	GP-GM	(12-14') Fine gravel with some corase gravel, gray silt and some fine to coarse sand. Moist
	0.0		
15	0.0	SW	(14-16') Medium brown, fine to medium sand with quartzite gravel (f-c) and trace silt. Moist.
	0.0		
	0.0	SP-SM	(16-26.5') Medium sand with silt and some fine to medium quartzite gravel. Clay inclusion at 17.5'. Moist. Light brown medium sand with orange brown medium sand laminations at 21.5'
	0.0		
	0.0		
20	0.0		
	0.0		
	0.0		
	0.0		
	0.0		
25	0.0		
	0.0		
	0.0	MH	(26.5-28.5') Very lt br compact silt w/ clay and or-br & red silt stringers @26.5'.
	0.0		
	0.0	SP-SM	(28.5-29') Medium sand with silt. Moist.
	0.0	SW	(29-37.5') Light brown fine to medium sand with silt. Moist. Red brown and orange brown sand stringers at 33' and 35'
30	0.0		
	0.0		
	0.0		
	0.0		





BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-15R** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	6/28/10 - 06/29/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 156'. Final intervals for 3 nested wells are: MW15R-1 = 3-38ft, MW15R-2 = 40-85ft, MW15R-3 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
35	0.0	SW	(29-37.5') Light brown fine to medium sand with silt. Moist.
	0.0		
	0.0		
	0.0	ML	(37.5-40.5') Lt-br compact silt with or-br and red-br silt inclusions at 39'. Dry.
	0.0		
40	0.0		Sand (m-c) with quartzite gravel at 39'
	0.0		Or-lt-br sand(m-c) and qrtzite gr (f-c) at 40'
	0.0		Compact silt inclusion @ 40.2-40.3'
	0.0	SW	(40.5-44.5') Sand(f-m) w/ some gravel(f-c). Cobbles at 43'. Moist.
	0.0		
45	0.0		
	0.0		(44.5-48') Sand(f-c) w/ rounded quartzite gravel(f-c). Moist.
	0.0		
	0.0		
	0.0		(48-50') Light brown to orange brown, medium to coarse sand with fine gravel. Moist.
50	0.0	SP	(50-50.5') Red-br sand (f) with gravel (f-c).
	0.0	GP	(50.5-51.5') Red-br gravel and sand with lt-br clayey silt inclusions. Wet. Cobble at 51.5'
	0.0		
	0.0	SP	(51.5-53') lt or-br sand (m) w/ gravel (f-c).
	0.0	ML	(53-53.5') compact very lt-br silt. Dry.
55	0.0	SW	(53.5-56') Lt or-br sand (f-c) w gravel (f-c)
	0.0	GW	(56-57.5') Fine to coarse gravel, washed with little fines. Some medium sand. Wet.
	0.0		
	0.0	SW	(57.5-58') Or-br sand (m-c) w/ gravel (f-c).
	0.0	ML	(58-58.5') Compact silt. Dry.
60	0.0	SW	(58.5-59.5') Sand(f-m) w/ gr(f-c) & silt. Moist.
	0.0	ML	(59.5-60') Compact silt.
	0.0	SW	(60-76') Fine to medium sand. Moist. Compact silt inclusions at 61'.
	0.0		
	0.0		
65	0.0		
	0.0		
	0.0		
	0.0		

BMT Entech

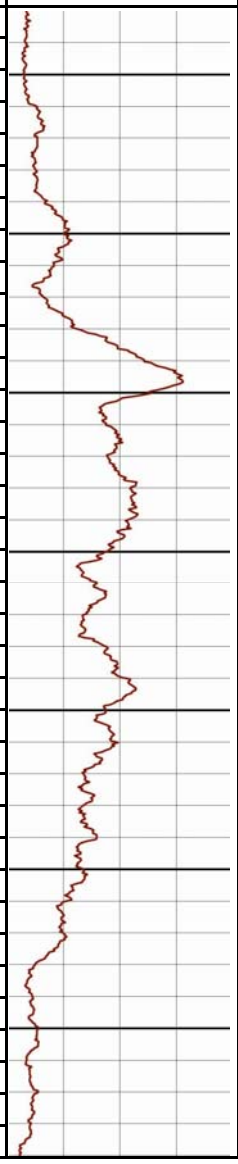
Soil Boring and Monitoring Well Construction Log

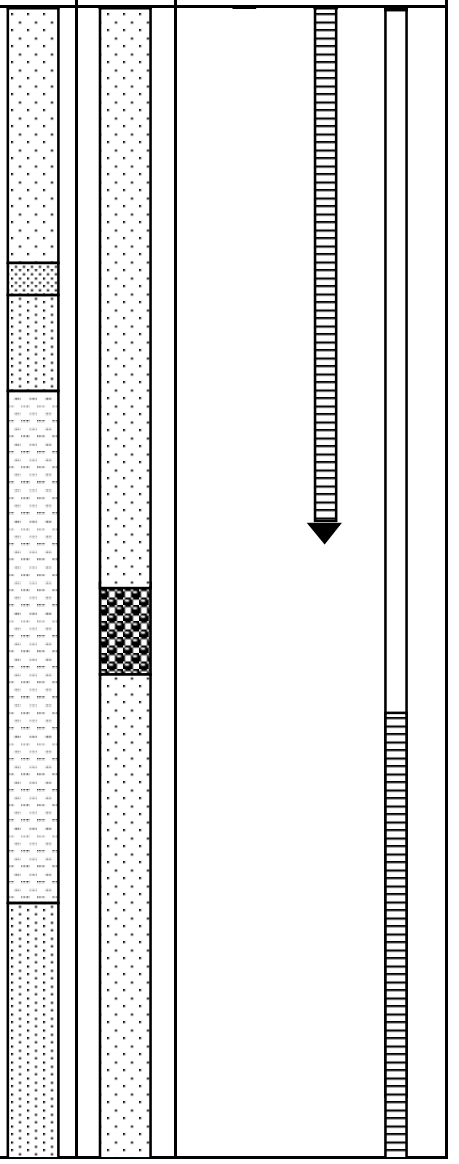
MW-15R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	6/28/10 - 06/29/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 156'. Final intervals for 3 nested wells are: MW15R-1 = 3-38ft, MW15R-2 = 40-85ft, MW15R-3 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
70	0.0	SW	(60-76') Fine to medium sand. Moist. Clay inclusions at 68'
75	0.0	SM	(76-77') Fine to medium sand. Wet.
	0.0	SP	(77-80') Compact, light brown fine sand with silt and trace clay. Moist. Gradually siltier with depth. Yellow brown trace clay at 79'
80	0.0	ML	(80-80.5') Blck compact silt w/charcoal. Dry.
	0.0		(80.5-82') Lt-med br & or-br compact silt. Dry.
	0.0		(82-83') Red-br silt w/ fine sand stringers.
	0.0		(83-84.5') Light & medium brown compact silt, intermixed. Dry. Hard.
85	0.0		(84.5-86.5') Light brown silt with some fine sand. Compact. Moist.
	0.0		(86.5-87') Compact silt with red-br inclusions.
	0.0		(87-92.5') Very hard, light-brown compact silt. Dry. Red-brown & orange-brown silt stringers throughout.
90	0.0		
	0.0		
	0.0		
	0.0	ML	(92.5-96') Slightly compacted silt. Moist.
95	0.0		
	0.0		
	0.0	SP-SM	(96-111') Red-brown fine sand with silt and clay inclusions. Wet.
	0.0		
	0.0		
100	0.0		
	0.0		
	0.0		
	0.0		
	0.0		





BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-15R
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	6/28/10 - 06/29/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 156'. Final intervals for 3 nested wells are: MW15R-1 = 3-38ft, MW15R-2 = 40-85ft, MW15R-3 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
105	0.0	SP-SM	(96-111') Red-brown fine sand with silt and clay inclusions. Wet.
	0.0		
	0.0		
	0.0		
	0.0		
	0.0		
110	0.0		
	0.0	GW	Fine to medium quartzite gravel at 112'
	0.0	SW	(112-116') Medium to coarse sand with some fine gravel and trace silt.
	0.0		
	0.0		
115	0.0		
	0.0	SP	(116-117') Coarse sand with gravel (f-c).
	0.0		(117-117.5') Coarse sand.
	0.0	GW	(117.5-121') Fine to coarse gravel and coarse sand. Moist.
120	0.0		
	0.0	ML	(121-122') Light brown compact silt with trace clay. Dry. Quartz cobbles at 122'
	0.0	SP	(122-123.5') Medium-red brown coarse sand with some coarse quartzite gravel.
	0.0		
125	0.0	ML	(123.5-125.5') Reddish-brown silt with fine sand and rounded quartzite gravel.
	0.0		
	0.0	CL	(125.5-126') Light brown clay intermixed with red-brown silt, fine sand and trace gravel.
	0.0	MH	(126-130') Compact silt with trace light brown clay. Dry. Fine to coarse gravel at 130'
130	0.0		
	0.0	SP	(130-132') Light brown fine sand with silt.
	0.0		
	0.0		(132-136') Light brown fine sand with trace clay inclusions. Moist.
	0.0		Orange brown, red brown and dark brown fine sand at 136'
135	0.0		
	0.0	CL	(136-136.5') Red-brown clay.
	0.0		(136.5-143') Green clay with trace silt.
	0.0		
140	0.0		

Gamma Log (API units): Natural Gamma, 0 – 100

Lithology

Screen Pack/ Grout Seal

Well Construction: 1 2 3

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-15R** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	6/28/10 - 06/29/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 156'. Final intervals for 3 nested wells are: MW15R-1 = 3-38ft, MW15R-2 = 40-85ft, MW15R-3 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2 3
140		0.0	CL	(136.5-143') Green clay with trace silt.			
		0.0					
		0.0					
		0.0		(143-146') Dark green to gray clay with some compacted silt.			
		0.0					
145		0.0					
		0.0		Weathered bedrock intermixed with green clay at 146'			
		0.0					
		0.0					
		0.0					
150		0.0	NA	(150-156') Dark green and gray clay intermixed with weathered rock. Hard. Dry.			
		0.0					
		0.0					
		0.0					
155		0.0					
		0.0					

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-22
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/23/10 - 06/24/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flushmount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 40 ft. 7" boring to a depth of 79 ft, 6" boring to a depth of 146'. Final intervals for 3 nested wells are: MW22-1 = 5-40ft, MW22-2 = 49-79ft, MW22-3 = 87-132ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
	0.0		(0-2") Grass and orgaincs
	0.0	ML-SW	(2"-2') Brown silt w/ sand (f-m) & gr (m-c).
	0.0	SM	(2-5') Orange-brown sand (f-m) & silt w/ some rounded quartzite gravel (m-c).
	0.0		
	0.0		
5	0.0	ML-SP	(5-6') Light brown silt w/ sand (f).
	0.0	SP-GW	(6-7') Dk or-br sand(m) w/ quartzite gr. Moist.
	0.0	SM	(7-9') Light brown sand(f-m) & silt. Dark brown sand inclusions.
	0.0		
	0.0		(9-15') Light brown fine sand with silt. Turns orange brown at 12'
10	0.0		
	0.0		
	0.0		
	0.0		
15	0.0	GW	Rounded quartzite gravel(f-c) at 15'
	0.0	MH	(15-15.5') Compact light brown silt.
	0.0	SM	(15.5-16') Lt-br sand(f) & silt.
	0.0		(16-20') Light to sark brown sand(f-m) intermixed w/ silt. Wet.
	0.0		
	0.0	GW	Rounded quartzite gravel(m-c) at 18.5-19'
20	0.0	MH	(20-20.75') Light brown compact silt.
	0.0	SM	(20.75-23') Sand(f-m) intermixed w/ orange-brown silt. Moist.
	0.0		
	0.0	ML-SW	(23-23.5') Silt w/ med brown sand(f-m)
	0.0	SM	23.5-26') Sand(f) w/ light brown silt. Wet.
25	0.0		
	0.0	SP-ML	(26-30') Light brown sand(f) w/ silt & stringers of orange brown sand(f). Very wet.
	0.0		
	0.0		
	0.0		Red siltstones at 30'
30	0.0	SW-GW	(30-34') Light brown sand(m-c) w/ gravel(f-c) & silt. Wet.
	0.0		
	0.0		Light brown silt inclusions and cobbles at 32'
	0.0		

Gamma Log (API units): Natural Gamma, 0 – 100

Lithology

Screen Pack/ Grout Seal

Well Construction: 1 2 3

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-22
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/23/10 - 06/24/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flushmount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 40 ft. 7" boring to a depth of 79 ft, 6" boring to a depth of 146'. Final intervals for 3 nested wells are: MW22-1 = 5-40ft, MW22-2 = 49-79ft, MW22-3 = 87-132ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
35	0.0	SM-GW	(34-35.5') Sand(f) w/ silt & gravel.
	0.0	MH-GW	(35.5-36') Compact gray silt w/ gravel(f).
	0.0	SP-GW	(36-38') Sand & gravel(f-c) w/ orange-brown silt & cobbles. Wet.
	0.0		
	0.0	GM	(38-38.5') Gravel w/ sand & silt. Moist.
	0.0	MH	(38.5-39') Compact light brown silt.
40	0.0		(39-46') Compact light brown, grading to reddish brown, silt w/ red silt inclusions & trace clay.
	0.0		
	0.0		
	0.0		
	0.0		
45	0.0		
	0.0		
	0.0		(46-47.5') Lt-br compact silt with clay. Wet.
	0.0	SM	(47.5-48') Sand(f) w/ silt. Moist.
	0.0	SW-SC	(48-49') Sand(f-c) w/ gravel & silt. Wet.
	0.0	SM	(49-50') Sand(f) w/ silt. Wet.
50	0.0	GW-GM	(50-50.5') Gravel(f-c) w/ sand(f-c) & silt.
	0.0	ML-SP	(50.5-51') Silt w/ sand(m-c) & gravel. Moist.
	0.0	SW	(51-52') Sand & gravel(f-c) w/ silt. Wet.
	5.8	MH	(52-54') Light brown compact silt. Dry.
	0.0	ML-SP	(53-54.5') Lt-br comp silt w/ sand(m). Dry.
55	13.1	SW	(54.5-56') Sand(f-c) w gravel(f-c) Moist.
	4.1		(56-61') Sand(f-c) w/ rounded quartzite gravel(f-c). Some compact silt inclusions at 60.5'. Wet.
	0.0		
	0.0		
	7.1		
60	0.0		
	0.0	GW-GM	(61-62') Gravel(f-c) w/ sand(f-c) & silt. Wet.
	0.0		(62-63') Gravel(f-m) & sand(f-c) w/ silt. Wet.
	0.0		(63-66') Gravel(f-c) & samd(f-c) w/ silt.
	0.0		
65	0.0		
	0.0		(66-70') Gravel(f-c) & sand(f-c) w/ trace silt. Wet.
	0.0		

Gamma Log (API units): Natural Gamma, 0 – 100

Lithology

Screen Pack/ Grout Seal

Well Construction: 1 2 3

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-22** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/23/10 - 06/24/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flushmount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 40 ft. 7" boring to a depth of 79 ft, 6" boring to a depth of 146'. Final intervals for 3 nested wells are: MW22-1 = 5-40ft, MW22-2 = 49-79ft, MW22-3 = 87-132ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0–100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2 3
70		0.0	GW-GM	(66-70') Gravel(f-c) & sand(f-c) w/ trace silt. Wet.			
		0.0					
		0.0	SW	(70-72') Sand(f-m) w/ some gravel & trace silt. Wet.			
		0.0					
		0.0	GW-GM	(72-74') Gravel(f-m) & sand(f-c) w/ some silt. Wet.			
		0.0					
75		0.0		(74-75.5') Gravel(f-c) w/ sand(f-c) & silt. Wet.			
		0.0	SW	(75.5-76') Sand(f-m) & gravel(f-m)			
		0.0	GW	(76-77.25') Grave(f-c) w/ no fines. Wet.			
		0.0					
		0.0	MH	(77.25-78') Compact sandy silt. Moist.			
		0.0	SW	(78-79') Sand(m-c) & gravel(f-m) w/silt. Moist.			
80		0.0	MH	(79-81') Compact silt w/ sand(f).			
		5.4		(81-83.5') Compact silt with fine sand and orange-reddish brown silt stringers. Moist.			
		0.0					
		0.0		(83.5-84') Silt w/ sand(f) & silt stringers. Dry.			
		0.0		(84-86') Lt-br comp silt w/ sand(f). Dry.			
85		0.0					
		0.0	SW	(86-90') Light brown sand(f-m) w/ some silt. Moist.			
		0.0					
		0.0					
		0.0					
90		0.0	SW	(90-93') Light brown sand(f-m) w/ some silt, quartz gravels(f-m) & cobbles.			
		0.0					
		0.0					
		0.0		(93-96') Red-brown sand(f-m) w/ some silt, quartz gravel(f-m) & cobbles.			
95		0.0					
		0.0					
		0.0	SM	(96-99') Red-brown sand(f-m) w/ silt & clay inclusions. Wet.			
		0.0					
		0.0					
100		0.0	SW	(99-103') Red-brown sand(f-m) w/ some silt, quartz gravel(f-m) & cobbles.			
		0.0					
		0.0					

BMT Entech

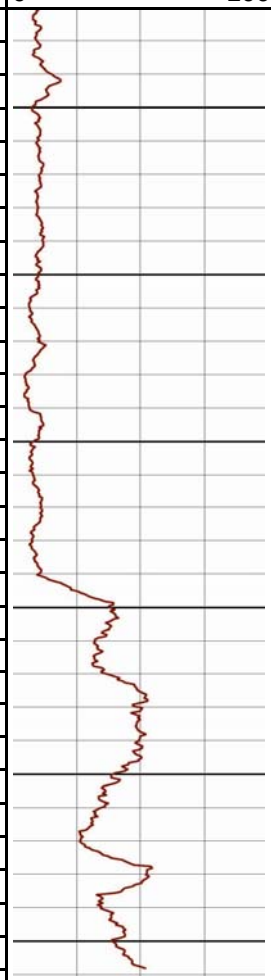
Soil Boring and Monitoring Well Construction Log

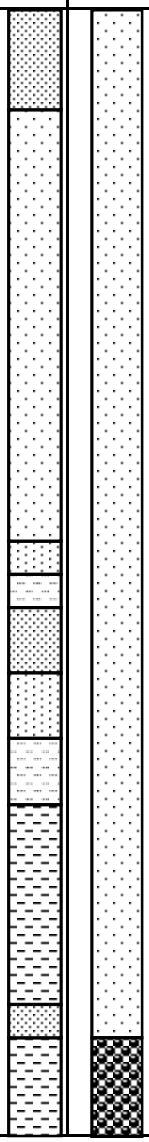
MW-22
ARS
BARC 6
Biodegradable Site

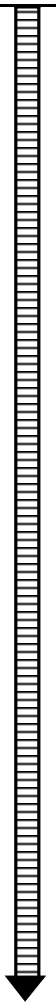
Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/23/10 - 06/24/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flushmount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 40 ft. 7" boring to a depth of 79 ft, 6" boring to a depth of 146'. Final intervals for 3 nested wells are: MW22-1 = 5-40ft, MW22-2 = 49-79ft, MW22-3 = 87-132ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
	0.0	SW	(103-103.5') Sand(f-c) w/ gr(f-c) & some silt.
	0.0	SM	(103.5-105.5') Orange-brown sand(m-c) w/ silt & trace fine gravel.
105	0.0		
	0.0	SW	(105.5-106') Sand w/ silty clay inclusions.
	5.8		(106-111') Sand(f-c) w/ gravel(f-m). Wet.
	0.0		
	0.0		
	0.0		
110	0.0		
	0.0		
	0.0		(111-116') Light-orange brown sand(m) w/ some silt & trace gravel. Moist.
	0.0		
	0.0		
	0.0		
115	0.0		
	0.0	SW-CL	(116-117') Sand(f-c) w/ white clay inclusions.
	0.0	SW	(117-118') Sand(m-c) w/ gr(f-c) & silt. Wet.
	0.0	SP	(118-119') Sand(m) w/ redsilt & clay incl.
	0.0	ML-GP	(119-120') Clayey silt w/ gravel(c)& cobbles.
120	0.0	SM	(120-122') Sand(f-m) w/ silt. Orange-red brown silt stringers throughout.
	0.0		
	0.0	SP	(122-123.5') light brown to red brown sand(m). Moist.
	0.0		
	0.0	ML	(123.5-124') Lt-br clayey silt w/ gravel(f)
125	0.0	ML-SP	(124-126.5') Silt w/ sand(f) intermixed. Moist.
	0.0	MH	(126.5-127') Lt-br comp silt w/ tr clay. Dry.
	0.0		(127-128') Comp silt with silt modules. Dry.
	0.0		(128-131') Very light and red-brown compact silt. Dry.
	0.0		
130	0.0		
	0.0		(131-132') Very compacted silt.
	0.0	SM	(132-132.5') Sand(f) w/ silt. Moist.
	0.0	MH	(132.5-134') Comp silt w/ tr clay. Moist.
	0.0		(134-134.5') Comp silt with mica.
135	0.0		(134.5-136') Compact silt & sand(f). Moist.







BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-22** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/23/10 - 06/24/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Flushmount
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 40 ft. 7" boring to a depth of 79 ft, 6" boring to a depth of 146'. Final intervals for 3 nested wells are: MW22-1 = 5-40ft, MW22-2 = 49-79ft, MW22-3 = 87-132ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2 3
		0.0	NA	(136-146') Gray and black compacted saprolite. Micaceous throughout. Appears to be saprolite of gneiss origin. Dry.			
		0.0					
		0.0					
		0.0					
140		0.0					
		0.0	NA				
		0.0					
		0.0					
		0.0					
145		0.0					

BMT Entech

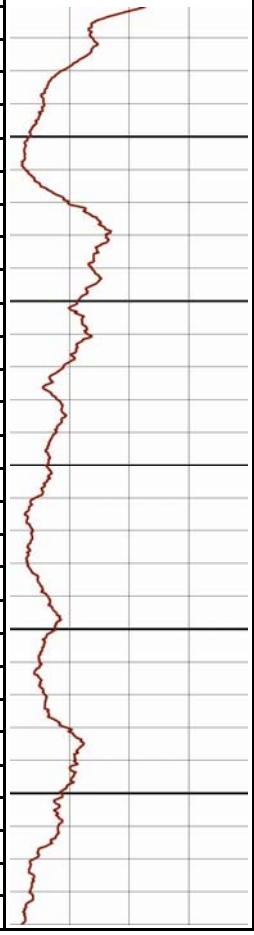
Soil Boring and Monitoring Well Construction Log

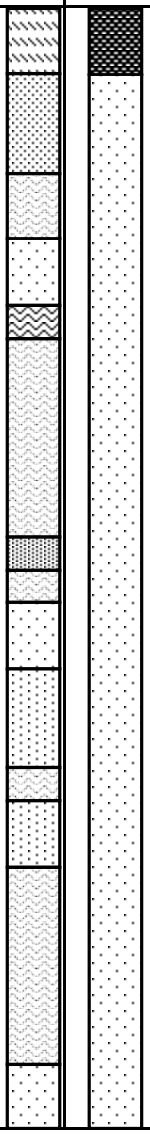
MW-23
ARS
BARC 6
Biodegradable Site

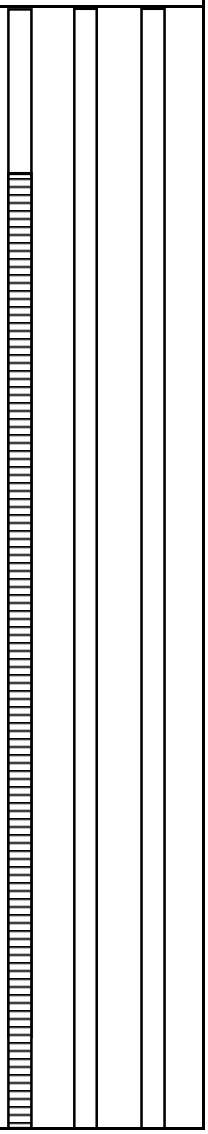
Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/28/10 - 06/30/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	Full Sonic Trackrig	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 136'. Final intervals for 3 nested wells are: MW23-1 = 5-41ft, MW23-2 = 43-68ft, MW23-3 = 81-116ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
	0.0	OL	(0-1.5') Dark brown to black organics. Well decompoed with roots throughout.
	0.0		
	0.0	SM	(1.5-4.5') Light gray to white, sand(f) w/ silt. Moist.
	0.0		
	0.0		
5	0.0	CL	(4.5-7') Light to dark gray sandy clay.
	0.0		
	0.0	SW	(7-8.5') Medium orange to orange brown sand w/ gravel(f-c) & some cobbles.
	0.0		
	0.0	CH	(8.5-10') Light gray elastic clay.
10	0.0	CL	(10-12') Light gray clay with some sand and silt intermixed.
	0.0		
	0.0	CL-SP	(12-16') Light gray, sandy clay with intrusions of red sand(m) & gravel(f-c) at 11.5'.
	0.0		
	0.0		
15	0.0		
	0.0	SC	(16-17') Clayey sand(f) w/ tr gr & clay intr.
	0.0	CL	(17-18.5') Lt-gray clay w/ sand(f) & tr gr.
	0.0	SW	(18.5-20') White to red, sand(f-m) w/ gravel(f-c) & some cobbles.
	0.0		
20	0.0	SP	(20-22') Light brown sand(f) w/ some silt and trace gravel.
	0.0		
	0.0		(22-22.5') Lt-br sand(f) w/ gr(f-c) & cobbles.
	0.0	CL	(22.5-23') Light brown silty-clay.
	0.0	SP	(23-23.5') Lt-br sand(m) w/ gr(f-c) & clay int.
25	0.0		(23.5-26.5') Fine sand w/ gravel (f-c)
	0.0	CL	(26.5-28') Yellow to yellow-brown clay..
	0.0		
	0.0	CL-SP	(28-29') White clay w/ sand(f) & gr(f-c) icl.
	0.0		(29-30') White clay w/ sand(f) inclusions.
30	0.0	CL-GW	(30-32') White sandy clay w/ gravel(f-c) & silt.
	0.0		
	0.0	SW	(32-34') Light brown sand(m-c) w/ gravel(f-c).
	0.0		







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Soil Boring and Monitoring Well Construction Log

MW-23
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/28/10 - 06/30/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	Full Sonic Trackrig	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 136'. Final intervals for 3 nested wells are: MW23-1 = 5-41ft, MW23-2 = 43-68ft, MW23-3 = 81-116ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	PID (ppm)	USCS	Description
35	0.0	SP	(34-35') Lt-br sand(f) w/ gr(f-c) & clay incl.
	0.0		(35-36') Med-br sand(f) w/ gravel(f-c).
	0.0		(36-38') Or-red br sand(f) w/ gr(f-c) & silt.
	0.0		(38-38.5') Sand(f) w/ gr(f-c) & clay inclusions.
	0.0		(38.5-38.75') Sand(f) w/ clay inclusions.
40	0.0	CL-SP	(38.75-40') Silty clay w/ sand(f) inclusions.
	0.0	MH	(40-42') White to light gray compact silt.
	0.0		
	0.0	SM	(42-44') Silty sand(f) w/ clay inclusions.
	0.0		
45	0.0	SP	(44-46') White to light brown sand(f) w/ gravel(f-c) & clay inclusions.
	0.0		
	0.0		(46-50') Sand(f) with inclusions of sandy clay. Intrusion of orange-brown medium sand at 48.5'
	0.0		
	0.0		
50	0.0	MH	(50-51.5') Light gray, compact clayey silt.
	0.0	CL	(51.5-52') White silty clay with trace gravel.
	0.0	SP	(52-54') White to light gray sand(f) w/ some silt.
	0.0		
	3.4		(54-55') Sand(f) w/ silt & clay inclusions.
55	0.0	SW	(55-55.5') Sand(m-c) with clay incl. & gr.
	0.0	SP	(55.5-57') Gr sand(f) w/ red sand intr & silt.
	0.0		(57-58') Sand(f) intermixed with silt.
	0.0		(58-60') Sand(f) w/ silt intrusions & some clay.
	0.0		
60	0.0		(60-62') White to light gray sand(f).
	0.0		
	0.0		(62-64') Light brown sand(f) w/ trace gravel(f) & green inclusions of sand(m).
	0.0		
	0.0		(64-65') Red to red-brown fine sand.
65	0.0	CH	(65-67') Reddish-brown silty clay.
	0.0		
	0.0		(67-71.5') Gray to dark gray silty-clay.

Gamma Log (API units) — Natural Gamma, 0 to 100

Lithology

Screen Pack/ Grout Seal

Well Construction: 1 2 3

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Soil Boring and Monitoring Well Construction Log

MW-23
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/28/10 - 06/30/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	Full Sonic Trackrig	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 136'. Final intervals for 3 nested wells are: MW23-1 = 5-41ft, MW23-2 = 43-68ft, MW23-3 = 81-116ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2 3
70		0.0	CH	(67-71.5') Gray to dark gray silty-clay.			
75		0.0	CH	(71.5-75') Gray to dark gray silty clay interbedded with black charcoal.			
80		0.0	CH	(75-80') Light gray clay with some silt.			
85		0.0	CH	(80-83') Light gray clay with intrusions of red-brown, sand(m).			
90		0.0	SP	(83-90') Light brown to medium brown sand(f) w/ inclusions of red to red-brown sand(f).			
95		0.0	SP	(90-96') Very light brown fine sand intermixed with some red-brown fine sand			
		0.0	GW-GM	(96-96.5') Gravel(f-c) w/ sand(f), silt & clay.			
100		0.0	SP	(96.5-100') Very light brown to medium brown sand(f) w/ gravel(f-m) & white clay inclusions.			
		0.0	NA	(100-105') No Return			

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-23
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	8", 7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/28/10 - 06/30/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	8", 7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	Full Sonic Trackrig	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 8" boring to a depth of 38 ft. 7" boring to a depth of 85 ft, 6" boring to a depth of 136'. Final intervals for 3 nested wells are: MW23-1 = 5-41ft, MW23-2 = 43-68ft, MW23-3 = 81-116ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description
105		0.0	NA	(100-105') No Return
		0.0		
		0.0		
		0.0	SP	(105-110') Light brown sand(f) w/ trace amounts of black sand(f). Gray silt at 107.5'
		0.0		
		0.0		
		0.0		
110		0.0		
		0.0		(110-113') Light brown to medium brown sand w/ inclusions of green sand(f).
		0.0		
		0.0	GW-	(113-114') Gravel(f-c) w/ brown fine sand.
		0.0	ML-GP	(114-114.5') Wht & red silt intterbedded w/gr.
		0.0	CL	(114.5-115') White to gray silty clay.
115		0.0		(115-120') Light gray compacted clayey silt with some red clay.
		0.0		
		0.0	MH	
		0.0		
		0.0		
120		0.0	SW	(120-121') Sand(f-m) w/ tr sand(c).
		0.0	GW	(121-122.5') Gravel(f-c) w/ cobbles, sand(f), silt & clayey silt.
		0.0		
		0.0	MH	(122.5-123') White compact silt w/ gravel(f).
125		0.0		(123-125') Gray saprolite with silt.
		0.0		(125-130') Light gray saprolite.
		0.0	NA	
		0.0		
		0.0		
130		0.0		

Lithology

Screen Pack/ Grout Seal

Well Construction 1 2 3

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-24
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/24/10 - 06/25/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 33 ft, 6" boring to a depth of 146'. Final intervals for 2 nested wells are: MW24-1 = 5-33ft, MW23-2 = 40-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
		0.0	ML-SP	(0-1') Silt w/ sand(f) & rounded quartzite gr.			
		0.0		(1-1.75') Med-dark brown silt w/ sand(f). Dry.			
		0.0	MH-GW	(2-4') Orange-brown compact silt w/ quartz gravel(f-c) & quartz cobbles. Dry.			
		0.0					
5		0.0	MH-SW	(4-6') Orange brown to brown compact silt w/ sand(f-m). Slightly moist.			
		0.0	SP-ML	(6-11') Orange-brown sand(f-m) with silt. Dry.			
		0.0					
		0.0					
		0.0					
10		0.0					
		0.0		(11-11.5') Or-brown sand(f) w/ silt. Moist.			
		0.0		(11.5-16') Light-brown sand(f) w/ silt intermixed with orange-brown sand(f). Dry.			
		0.0					
15		0.0					
		0.0					
		33.4	SW-ML	(16-24.5') Light brown sand(f-m) w/ silt. Dry. Inclusions of: dark brown compact sand, reddish brown sand and silt.			
		24.9					
20		0.0					
		0.0					
		0.0					
		0.0					
		0.0	SC-ML	(24.5-26') Clayey sand(m-c) w/ silt. Moist.			
25		0.0	SW-ML	(26-27') Sand(m-c) w/ silt. Moist.			
		0.0	MH	(27-28') Clayey sand(f). Most.			
		0.0	SW-ML	(28-28.5') Sand(f-m) w/ silt.			
		0.0		(28.5-29') Sand(f-c) w/ silt, sub-an gr. Moist.			
		0.0	SC-ML	(29-32') Clayey sand w/ silt. Moist. Light to orange brown sand(m) stringer at 29.25' and gravel(f-c) at 31.5'			
30		0.0					
		0.0					
		0.0	MH	(32-33') Light brown compact silt. Dry.			
		0.0	MH-SW	(33-35') Compact silt w/ sand inclusions. Dry.			

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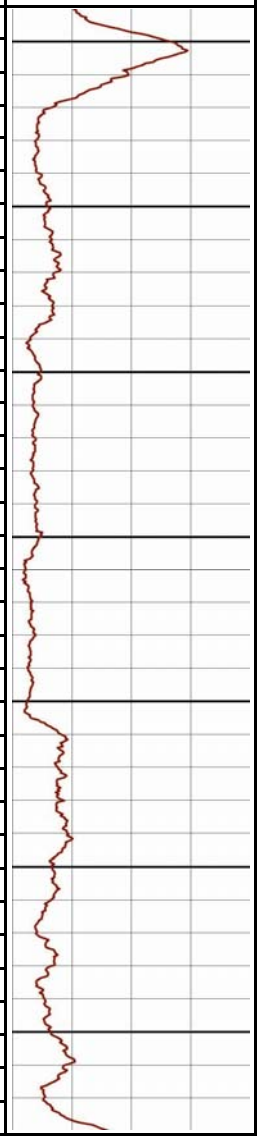
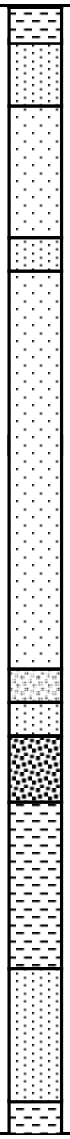
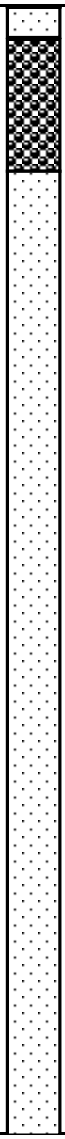
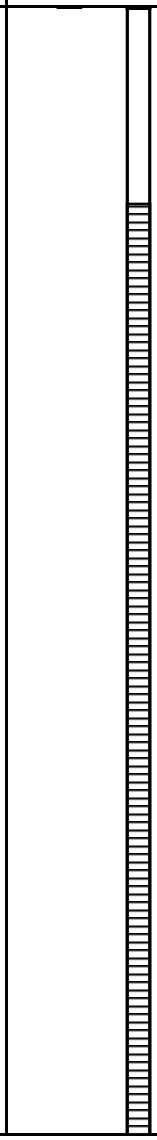
Soil Boring and Monitoring Well Construction Log

MW-24
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/24/10 - 06/25/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 33 ft, 6" boring to a depth of 146'. Final intervals for 2 nested wells are: MW24-1 = 5-33ft, MW23-2 = 40-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
35		0.0	MH-SW	(33-35') Compact silt w/ sand inclusions. Dry.			
		0.0	SP	(35-35.5') Sand & gravel w/ silt & trace clay.			
		0.0	MH	(35.5-36') Light brown compact silt.			
		0.0	SW-GW	(36-41') Sand(f-c) w/ grave(f-c) & silt. Clay inclusions at 38-39'. Moist.			
40		0.0					
		0.0					
		0.0					
		0.0	SP-ML	(41-42') Lt-br silt w/ sand(f), red-br silt string.			
		0.0	SW-ML	(42-46') Light brown sand(f-m) w/ silt. Gravel(f-c) at 43-46' and compact silt inclusions at 45'. Moist.			
45		0.0					
		0.0					
		0.0					
		0.0	SW	(46-48') Sand(f-c) w/ trace silt & rounded, quartzite gravel(f-c).			
		0.0					
		0.0		(48-51') Sand(f-c) w/ rounded & subrounded quartzite gravel. Wet.			
50		0.0					
		0.0					
		0.0		(51-52') Lt-br sand(f-c), tr silt & gr(f-c) Moist.			
		0.0	SW-GW	(52-54') Orange brown sand(f-c) & rounded quartzite gravel. Moist.			
		0.0					
		0.0	GW-SP	(54-55.5') Gravel(f-c) w/ sand(c) & silt. Wet.			
55		0.0	MH	(55.5-56') Light brown compact silt.			
		0.0	SC	(56-56.75') Lt-br clayey sand(f-m). Wet.			
		0.0	SP	(56.75-57') Or-br sand w/ silt & tr gr. Moist.			
		0.0	MH-SW	(57-57.5') Compact silt, sand(f-c) & gr. Moist.			
		0.0	MH-GW	(59-60.5') Compact silt w/ gravel(f-c) & clay inclusions. Moist.			
60		0.0					
		0.0	MH	(61-63') Sand(f-m) w/ gr(f-c) & tr silt. Moist.			
		0.0					
		0.0	SP-ML	(63-67') Light brown sand(f) w/ silt. Clay inclusions at 66'. Moist.			
		0.0					
65		0.0					
		0.0					
		0.0	MH-ML	(67-70') Lt-br comp silt w/ silt stringers.			

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-24
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/24/10 - 06/25/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 33 ft, 6" boring to a depth of 146'. Final intervals for 2 nested wells are: MW24-1 = 5-33ft, MW23-2 = 40-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
70		0.0	MH-ML	(67-70') Lt-br comp silt w/ silt stringers.			
		0.0	SP-ML	(70-70.5') Lt-br sand(f) & silt w/ gr(f-m). Wet.			
		0.0	MH	(70.5-71.5') Lt-br compact silt. Moist.			
		0.0	SP-ML	(71.5-72') Sand(f-m) w/ silt.			
		0.0	MH-SP	(72-73') Compact silt with incl of or-br sand.			
		0.0	SW-CL	(73-74') Or-br sand(f-c) & gr(f) w/ clay incl.			
75		0.0		(74-75') Or-br sand(f-m) w/ clay inclusions. Rounded, quartzite gravel at 75.5'. Moist.			
		0.0					
		0.0	SW-GW	(76-77') Red-br sand(f-c) & gr(f-m) w/ silt.			
		0.0	SP-ML	(77-77.5') Red-br sand(f) w/ silt. Moist.			
		0.0		(77.5-80.5') Light brown sand(f) w/ silt and orange brown sand(f) stringers. Moist.			
80		0.0					
		0.0	SW	(80.5-82') Light brown sand(m-c) w/ some gravel(f-c). Moist.			
		0.0	SP-GW	(82-83.5') Red-br sand(m) w/ gr(f-c) & cobb.			
		0.0	SP-ML	(83.5-84') Or-br sand(f) w/ silt.			
		0.0		(84-85') Lt-br sand(f) w/ silt. Moist.			
85		0.0		(85-86') Or-br sand(f) w/ silt. Moist.			
		0.0	SW	(86-91.5') Reddish brown sand(m-c) w/ trace gravel(f) and shell fragments. Trace clay inclusions at 88'. Wet.			
		0.0					
		0.0					
90		0.0					
		0.0					
		0.0	ML-SP	(91.5-93') Light-brown silt w/ sand(f). Clay inclusions at 92.5'. Moist.			
		0.0					
		0.0	SP-ML	(93-95') Light brown sand(f) w/ silt. Slightly moist.			
95		0.0		(95-101') Light brown sand(m) w/ silt.			
		0.0					
		0.0					
		0.0					
		0.0					
100		0.0					
		0.0					
		0.0					

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-24
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/24/10 - 06/25/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 33 ft, 6" boring to a depth of 146'. Final intervals for 2 nested wells are: MW24-1 = 5-33ft, MW23-2 = 40-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description
		0.0	SP-ML	(101-105') Light brown and orange brown sand(m) w/ silt.
105		0.0		
		0.0		
		0.0	SC-GP	(105-106') Clayey sand(f) w/ gr(f) & silt.
		0.0	SP-ML-CL	(106-110') Sand(m) w/ silt & clay inclusions at 107'. Wet.
		0.0		
		0.0		
110		0.0		
		0.0	SW-ML	(110-116') Light brown to orange brown sand(f-m) w/ some silt.
		0.0		
		0.0		
		0.0		
115		0.0		
		0.0	SW-GW	(116-120') Light brown to orange brown sand(f-m) w/ gravel(f-c), some silt and clay inclusions at 117'
		0.0		
		0.0		
120		0.0		
		0.0	MH	(120-124') Light brown and orange brown sand(m) w/ trace quartzite gravel(f-m).
		0.0		
		0.0		
125		0.0	SW-GW	(124-126') Sand(m-c) w/ gravel(f-c) & trace silt. Moist to wet.
		0.0		(126-127') Or-br sand(m-c) w/ gravel(f-c).
		0.0		(127-130') Orange brown sand(m-c) w/ gravel(f-c). Clay inclusions at 129.5'.
		0.0		
		0.0		
130		0.0		
		0.0	CH-GW	(130-132') Compacted clay & gravel(f-c). Becomes clayey gravel at 132'.
		0.0	SP	(132-134') Red brown sand(c) w/ some gravel(f) and clay inclusions.
		0.0		
135		0.0	SC	(134-135') Light brown clayey sand.
		0.0	GC-SW	(135-136') Clayey gravel w/ sand(f-c)

Lithology | Screen Pack/ Grout Seal | Well Construction 1 2

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-24** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/24/10 - 06/25/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 33 ft, 6" boring to a depth of 146'. Final intervals for 2 nested wells are: MW24-1 = 5-33ft, MW23-2 = 40-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
		0.0	GC-SW	(136-138.5') Or-br clayey gravel w/ cobbles.			
		0.0	GC-SW	(136-138.5') Or-br clayey gravel w/ cobbles.			
		0.0	CL	(138.5-139') Lt-br clay w/ cobb & silt incl.			
		0.0	SW-CL	(139-139.5') Sand(f-m) white clay.			
140		0.0	CL	(139.5-146') Red clay.			
		0.0					
		0.0					
		0.0					
145		0.0					
		0.0					

BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-25
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/22/10 - 06/23/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 80 ft, 6" boring to a depth of 147'. Final intervals for 2 nested wells are: MW25-1 = 4-80ft, MW25-2 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description
		0.0	NA	(0-2") Grass, org w/ med-br sand(f) & silt.
		0.0	SP-ML	(2"-7') Medium brown sand(f) w/ silt & trace gravel. Dry.
		0.0		
		0.0		
		0.0		
5		0.0		
		0.0	SP	(7-9') Medium brown sand(f) w/ some dark brown fine sand.
		0.0		
		0.0	SP-ML	(9-11') Light brown sand(f) w/ silt.
		0.0		
10		0.0	SP	(11-17') Light brown sand(f).
		0.0		
		0.0		
		0.0		
		0.0		
15		0.0		
		0.0		
		0.0		
		0.0		(17-19') Light brown sand(f) w/ trace silt. Moist.
		0.0		
20		0.0		(19-20') Lt-br sand(m) w/ tr silt. Moist.
		0.0	SP-GW	(20-24') Light brown sand(m) w/ rounded quartzite gravel(f-c). Trace silt & medim-brown sand at 22'. White clay lense at 24'. Moist.
		0.0		
		0.0		
		0.0		
25		0.0	SP-ML	(24-24.5') Lt-br to red-br sand(f) w/ silt.
		0.0	MH	(24.5-26') Lt-br compact silt.
		0.0	SP-ML	(26-27') Sand(f) w/ silt & comp clay. Moist.
		0.0	ML-SP	(27-28') Silt w/ sand(f) & comp silt incl. Dry.
		0.0		(28-30') Silt w/ sand(f) & trace clay incl.
		0.0		
30		0.0		(30-31') Silt w/ sand(f) & clay. Sand(m) @ 31'
		0.0	CL	(31-31.5') Light brown clay.
		0.0	SP-GW	(31.5-33') Med-br sand(m) w/ gravel(f-c).
		0.0	SP	(33-37') Yw & br sand(m) w/ trace silt. Wet.

Lithology | Screen Pack/ Grout Seal | Well Construction 1 2

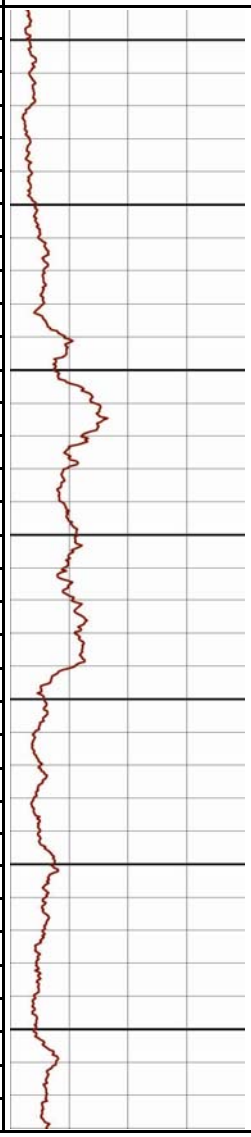
BMT Entech

Soil Boring and Monitoring Well Construction Log

MW-25
ARS
BARC 6
Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/22/10 - 06/23/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 80 ft, 6" boring to a depth of 147'. Final intervals for 2 nested wells are: MW25-1 = 4-80ft, MW25-2 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
35		0.0	SP	(33-37') Yw & br sand(m) w/ trace silt. Wet.			
		0.0					
		0.0					
		0.0	SW	(37-38') Sand(f-c) w/ quartzite gravel. Wet.			
		0.0	SW-CL	(38-39') Or-br sand(f-c). Clay at 38.5'.			
40		0.0	SP-CL	(39-40.5') Sand(m) w/ clay incl & gr(f-c).			
		0.0	ML-CL	(40.5-42') Silt w/ clay and sand, grading from fine to medium. Moist.			
		0.0					
		0.0		(42-43') Lt-br silt w/ trace compacted clay.			
		0.0	SP-ML	(43-44') Sand(f) w/ silt & sand(m). Moist.			
		0.0	ML-CL	(44-45') Lt-br silt w/ clay.			
45		0.0	ML	(45-46') Lt-br silt w/ tr cl & incl of sand(f)			
		0.0	MH	(46-47') Lt br compact silt.			
		0.0	SW-ML	(47-48') Sand(f-m) w/ silt.			
		0.0	ML	(48-50') Silt w/ trace sand(f) & trace clay.			
		0.0					
50		0.0		(50-54.5') Light brown silt w/ trace sand(f) & some clay. Lense of compact light brown silt with trace clay at 52'. Moist.			
		0.0					
		0.0					
		0.0					
55		0.0	SM	(54.5-57') Light brown to orange brown silty-sand w/ trace clay.			
		0.0					
		0.0					
		0.0	SW	(57-60') Sand(f-m) w/ trace silt. Orange-red sand inclusion at 59'. Wet.			
		0.0					
60		0.0					
		0.0		(60-60.5') Silt w/ clay and trace gravel.			
		0.0		(60.5-64') Sand(f-m) w/ trace silt, gravel(f-c) & cobbles.			
		0.0					
		0.0					
65		0.0		(64-68.5') Sand(f-m) w/ trace silt & trace sandstone. Moist.			
		0.0					
		0.0					
		0.0					

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-25** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/22/10 - 06/23/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 80 ft, 6" boring to a depth of 147'. Final intervals for 2 nested wells are: MW25-1 = 4-80ft, MW25-2 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description
70		0.0	GC	(68.5-70') Clayey gravel w/ trace sand & silt. Very elastic. Moist.
		0.0		
		0.0		(70-71.5') Clayey gr w/ incl of silt.
		0.0	SP	(71.5-73') Sand(m) w/ tr silt. Wet. Silt layer at 73'.
		0.0		
75		0.0		(73-80') Light brown and orange brown sand(m) w/ trace silt.
		0.0		
		0.0		
		0.0		
		0.0		
		0.0		
80		0.0		
		0.0	SW	(80-82') Light brown sand(f-m). Moist.
		0.0	GC	(82-83.5') Clayey gr, comp silt & sand(m-c) interbedded.
		0.0		
85		0.0	MH	(83.5-86') Compact silt w/ trace clay. Dry.
		0.0	ML-SP	(86-87') Silt w/ sand(f), tr gravel & trace clay.
		0.0	SP	(87-87.5') Sand(m). Moist.
		0.0	MH	(87.5-88') Lt-br plastic silt w/ tr clay.
		0.0	SP	(88-88.5') Sand w/ gravel and shell fragments.
		0.0	SW	(88.5-90') Sand(f-c). Wet.
90		0.0	SP	(90-102.5') Sand(m) w/ shell fragments. Wet.
		0.0		
		0.0		
		0.0		
		0.0		
95		0.0		
		0.0		
		0.0		
		0.0		
		0.0		
100		0.0		
		0.0		
		0.0		

Lithology | Screen Pack/ Grout Seal | Well Construction 1 2

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-25** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/22/10 - 06/23/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

Comments: 7" boring to a depth of 80 ft, 6" boring to a depth of 147'. Final intervals for 2 nested wells are: MW25-1 = 4-80ft, MW25-2 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
105		0.0	SP	(102.5-103') Sand(f) w/ trace gravel & clay.			
		0.0		(103-117') Orange brown sand(f) w/ silt. Moist.			
		0.0					
		0.0					
		0.0					
		0.0					
		0.0					
110		0.0					
		0.0					
		0.0					
		0.0					
		0.0					
115		0.0					
		0.0					
		0.0	SW	(117-125') Medium brown to orange brown sand(f-m) w/ green sand(f-m) inclusions. Moist.			
		0.0					
		0.0					
120		0.0					
		0.0					
		0.0					
		0.0					
		0.0					
125		0.0					
		0.0	CL	(125-127') Sand(f) w/ silt & gravel w/ some clay inclusions. Moist.			
		0.0	SP-CH	(127-129.5.') Sand(f) w/ clay inclusions.			
		0.0					
		0.0	MH	(129.5-131') Compact clayey silt w/ brown sand(f) sttringers. Dry.			
130		0.0					
		0.0	ML-CL	(131-133') Or-br silt w/ trace sand(f-m) & clay intermixed with gray clay & silt.			
		0.0					
		0.0	MH-CL	(133-134') Or-br comp silt w/ clay & siltst gr.			
		0.0		(134-135.5') Compact dry silt w/ clay.			
135		0.0	CL	(135.5-136.5') Greenish-brown clay.			
		0.0	ML-CL	(136.5-138.5') Gray silt & clay intermixed.			

BMT Entech	Soil Boring and Monitoring Well Construction Log	**MW-25** ARS BARC 6 Biodegradable Site

Client:	USDA, ARS	**Annulus Diameter:**	7", 6"
Project Number:	3018-003	**Screened Interval:**	Multiple; See Well Construction
Location:	BARC 6	**Slot Size:**	<0.01"
Date Started - Completed:	06/22/10 - 06/23/10	**Casing Interval:**	See Comments
Top of Pad Elevation:	NM	**Screen Pack:**	DSI #1 Sieve Filtered Sand
Top of Well Elevation:	NM	**Screen Pack Interval:**	Multiple; See Well Construction
Total Depth:	156'	**Grout Interval:**	Multiple; See Well Construction
Boring Diameter:	7", 6"	**Grout Seal Material:**	Pel Plug & Shure-Plug
Driller:	Boart Longyear	**Well Material:**	Sch. 40 PVC
Drill Method:	Rotasonic	**Well Finishing:**	Stick Up
Drill Rig:	600T Full Sonic Truck	**Depth to Water:**	NA
Inspector:	P. Phillips	**Depth to Bedrock:**	NA

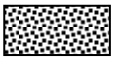
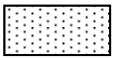
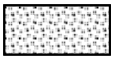
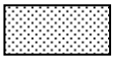
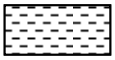
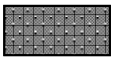
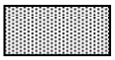
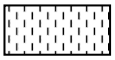
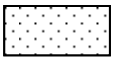
Comments: 7" boring to a depth of 80 ft, 6" boring to a depth of 147'. Final intervals for 2 nested wells are: MW25-1 = 4-80ft, MW25-2 = 90-140ft. Borehole was advanced with the rotosonic drilling technique which yields 100% recovery on all cores.

Depth ('bgs)	Gamma Log (API units) Natural Gamma 0 100	PID (ppm)	USCS	Description	Lithology	Screen Pack/ Grout Seal	Well Construction 1 2
		0.0	ML-CL	(136.5-138.5') Gray silt & clay intermixed.			
		0.0		(138.5-140') Dark brown to green brown clay. Dry.			
140		0.0		(140-147') Purple to gray clay. Dry. Sand(f) inclusions at 144.5 & 145.5'. Dry.			
		0.0					
		0.0	CL				
		0.0					
		0.0					
145		0.0					
		0.0					
		0.0					

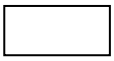
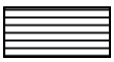
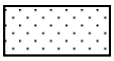
BMT Entech

Soil Boring and Monitoring Well Construction Log
Lithology and Well Construction Legend

Soil Boring Litholgy (USCS):

GW		SP		OL	
GP		SM		MH	
GM		SC		CH	
GC		ML		OH	
SW		CL		Pt	

Monitoring Well Construction:

Casing		Bentonite Chip Grout (Shure-Plug 1/8" Bentonite Chips)	
Screen		Pellet Grout (TR-30 1/4" Pel Plug)	
Sand Pack		Well Plug	

Notes:
(f) = fine, (m) = medium, (c) = coarse.
gr - gravel
w/ - with
& - and

ARS - Agricultural Research Service
BARC - Beltsville Agricultural Research Center
DSI - Drillers Supply International
NM - Not Measured
NA - Not Applicable
NR - Not Recorded in Field Notes
bgs - Below Ground Surface
PID - Photo-ionization Detector
ppm - Parts Per Million
USCS - Unified Soil Classification System
MW - Monitoring Well
CME - Consolidated Mining Equipment

ELEVATIONS

Ground Surface: 90.61'

Top of Casing (#1,2,3):
90.41', 90.40', 90.36'

Water Surface on 06-10-98:
86.92', 86.56', 85.56'

SPECIFICATIONS

GROUT

Cement: 235 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 13 gal
Weight: n/a lbs/gal
Interval: 0'-15',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 4 buckets
Brand: POSCo Pel-Plug
Intervals: 15'-20',
55'-60',98'-103',
128'-130.5'

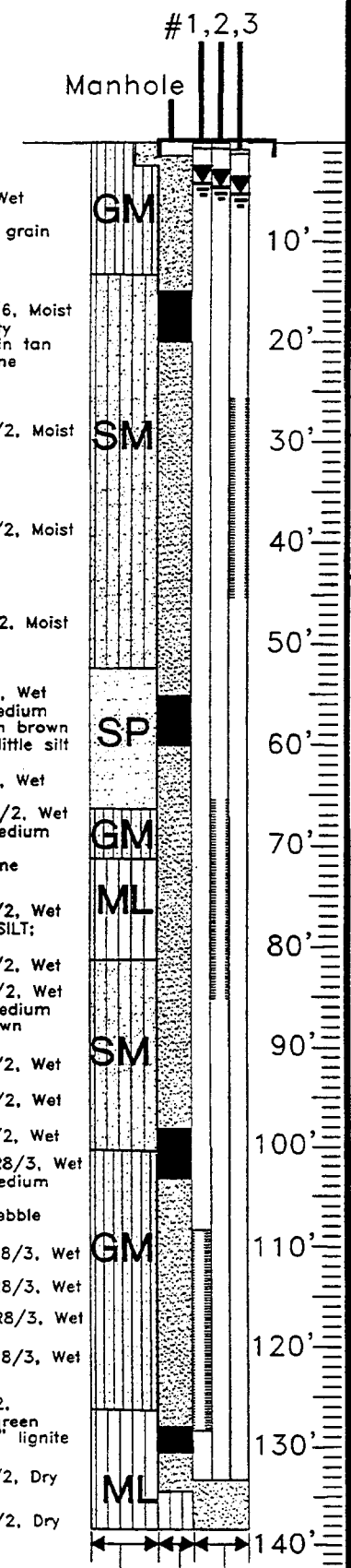
FILTER PACK

Composition: Sand #2
Quantity: 1550 lbs
Brand: Unimin
Intervals: 20'-55',
60'-98',103'-128',
130.5'-133'

Well Pipe Materials

3/4"ID
Brand: U.S. Filter
Schedule 80 (1),
80(2),40(3) PVC
Riser Length:
108'(1),65'(2),25'(3)
Screen Intervals:
25'-45' (3),
65'-85' (2),
108'-128' (1),
Slot: 0.02 inch
Sump Intervals:
44.5'-45' (3),
4.5'-85' (2),
27.5'-128' (1),

CONSTRUCTION DIAGRAM



Surface is gravel/fill

8'-9.5', GM, 5YR5/8, Wet Loosely compacted clayey fine to medium grain brown SAND and very fine pebble GRAVEL

18'-19.5', SM, 10YR8/6, Moist Loosely compacted, silty medium to coarse grain tan SAND; trace of very fine pebble gravel

28'-29.5', SM, 10YR8/2, Moist same; gray-brown; rust motteling

38'-39.5', SM, 10YR8/2, Moist same

48'-49.5', SM, 10YR8/2, Moist same

58'-59.5', SP, 5YR7/4, Wet Loosely compacted, medium to coarse grain pinkish brown SAND, rust motteling; little silt

63'-64.5', SP, 5YR7/4, Wet same

68'-69.5', GM, 2.5YR8/2, Wet Loosely compacted, medium to coarse grain gray silty SAND and very fine pebble GRAVEL

73'-74.5', ML, 10YR8/2, Wet grayish brown sandy SILT; red/yellow motteling

78'-79.5', ML, 10YR8/2, Wet same

83'-84.5', SM, 10YR8/2, Wet Loosely compacted, medium grain silty grayish brown silty SAND

88'-89.5', SM, 10YR8/2, Wet same

93'-94.5', SM, 10YR8/2, Wet same; rust motteling

98'-99.5', SM, 10YR8/2, Wet same

103-104.5', GM, 7.5YR8/3, Wet Loosely compacted, medium to coarse grain beige SAND and very fine pebble GRAVEL; little silt

108-109.5', GM, 7.5YR8/3, Wet same

113-114.5', GM, 7.5YR8/3, Wet same

118-119.5', GM, 7.5YR8/3, Wet same

123-124.5', GM, 7.5YR8/3, Wet same

128-129.5', ML, 5Y4/2, Slightly moist, sandy green SILT; trace of mica, 2" lignite layers at 127' & 129'

133-134.5', ML, 5YR4/2, Dry same; some garnet

138-139.5', ML, 5YR4/2, Dry same; some garnet

Generalized Lithology
Annulus Materials
Well Materials
Borehole Diameter: 6"

USDA Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW11
BORING No.: MW11

LOCATION: BARC 6 Biodegradable Site
Approximately 30' West & 219' South of WMATA entrance on Sunnyside Avenue

MARYLAND STATE PLANE COORDINATES:
493763.0 N
1338806.5 E
LATITUDE/LONGITUDE:
39°01'20.74" N
76°54'24.55" W

GEOLOGIST:
F. Colvais/C. Haggard

DRILLING COMPANY:
GeoServices, Inc.

DRILLER:
R. Stidham

DRILL RIG BRAND:
CME

DRILL RIG MODEL:
55, Truck Mounted + 750, ATV Mounted

DRILLING METHOD:
Mud Rotary

DRILLING FLUID:
Revert

AUGER BIT TYPE:
4.25" Roller Bit

CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 05/29/98
END DATE: 06/09/98

REMARKS:
SS samples collected every 10' from 0-60' and every 5' from 60-138'; wells #1&2 under slight pressure.

PROJECT No.: 96030-4
PERMIT No.: PG-94-0678

Revised: 09/98	By: FFC	File: B6_mw11.dwg

ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 95.65'

Top of Casing: 95.36'

Water Surface on 07-15-98: 87.73'

SPECIFICATIONS

GROUT

Cement: 1692 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 100 gal
Weight: n/a lbs/gal
Interval: 0'-50',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 50'-55'

FILTER PACK

Composition: Sand #2
Quantity: 650 lbs
Brand: Unimin
Interval: 55'-80'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 60'

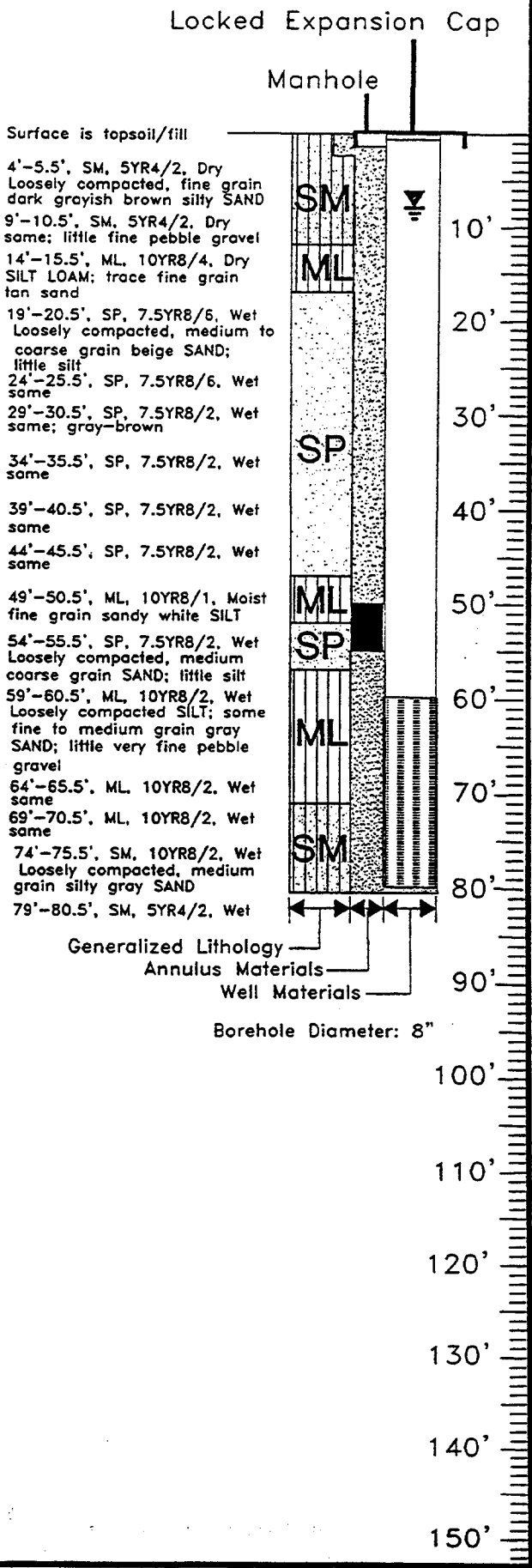
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 60'-80'

SUMP

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Interval: 79.5'-80',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service

Facility: Beltsville, Maryland

WELL No.: MW12
BORING No.: MW12

LOCATION: BARC 6 Biodegradable Site
Approximately 10' West & 145' South of the USDA office complex entrance (East) on Sunnyside Ave.

MARYLAND STATE PLANE COORDINATES:
493866.9 N
1338390.0 E
LATITUDE/LONGITUDE:
39°01'21.75" N
76°54'29.82" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 06/02/98
END DATE: 06/03/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.000417 ft/min; well is under pressure.

PROJECT No.: 96030-4
PERMIT No.: PG-94-0679

Revised: 09/98 | By: FFC | File: B6_mw12.dwg

ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 99.66'

Top of Casing: 99.44'

r Surface on 07-15-98: 81.87'

SPECIFICATIONS

GROUT

Cement: 1692 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 108 gal
Weight: n/a lbs/gal
Interval: 0'-50',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 50'-55'

.TER PACK

Composition: Sand #2
Quantity: 450 lbs
Brand: Unimin
Interval: 55'-80'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 60'

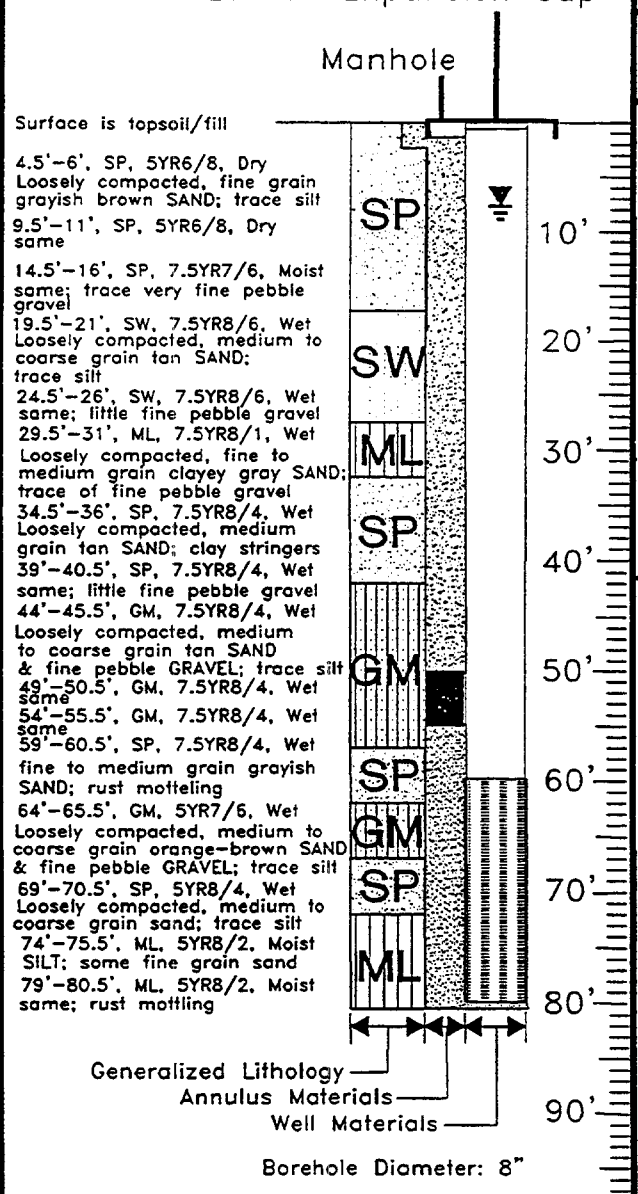
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 60'-80'

SUMP

1, 2"ID
Sch. 40 PVC
and: U.S. Filter
erval: 79.5'-80',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service

Facility: Beltsville, Maryland

WELL No.: MW13
BORING No.: MW13

LOCATION: BARC 6 Biodegradable Site
Approximately 300' East, 150' South of the USDA office complex bdlg (NE corner)

MARYLAND STATE PLANE COORDINATES:
492888.3 N
1338552.6 E
LATITUDE/LONGITUDE:
39°01'12.07" N
76°54'27.78" W

GEOLOGIST:
F. Colvais/C. Haggard
DRILLING COMPANY:
GeoServices, Inc.
DRILLER:
R. Stidham
DRILL RIG BRAND:
CME
DRILL RIG MODEL:
55, Truck Mounted
DRILLING METHOD:
HSA + Mud Rotary
DRILLING FLUID:
Revert
AUGER BIT TYPE:
4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 05/22/98
END DATE: 05/26/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.0158 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0680

Revised: 09/98 | By: FFC | File: B6_mw13.dwg

ENTECH INC
ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 83.26'

Top of Casing: 83.07'

Water Surface on 07-15-98: 80.22'

SPECIFICATIONS

GROUT

Cement: 1316 lbs
Brand: Magnolia Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 85 gal
Weight: n/a lbs/gal
Interval: 0'-38.5',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 38.5'-43.5'

FILTER PACK

Composition: Sand #2
Quantity: 500 lbs
Brand: Unimin
Interval: 43.5'-68.5'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 48.5'

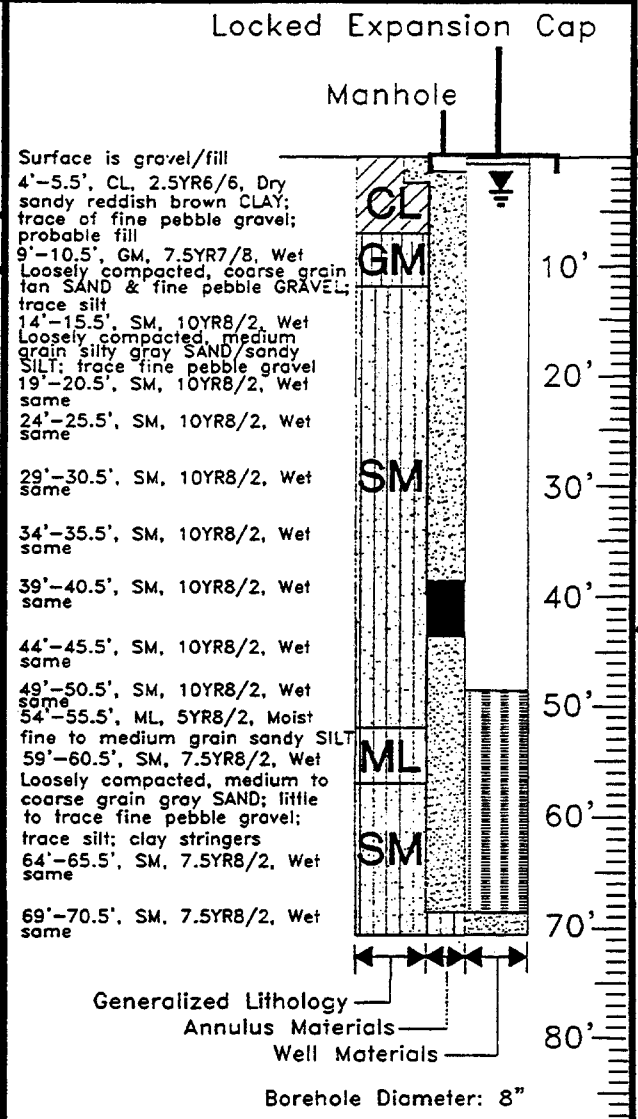
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 48.5'-68.5'

SUMP

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Interval: 68'-68.5',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW14
BORING No.: MW14

LOCATION: BARC 6 Biodegradable Site
Approximately 473' East, 601' South of WMATA entrance on Sunnyside Ave.

MARYLAND STATE PLANE COORDINATES:
493307.3 N
1339346.3 E
LATITUDE/LONGITUDE:
39°01'16.20" N
76°54'17.71" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 05/27/98
END DATE: 05/28/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.00558 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0681

Revised: 09/98 | By: FFC | File: B6_mw14.dwg

ENTECH INC
ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 84.51'

Top of Casing: 84.23'

er Surface on 07-15-98: 78.71'

SPECIFICATIONS

GROUT

Cement: 1363 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 85 gal
Weight: n/a lbs/gal
Interval: 0'-39'

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 39'-44'

FILTER PACK

Composition: Sand #2
Quantity: 500 lbs
Brand: Unimin
Interval: 44'-69'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 49'

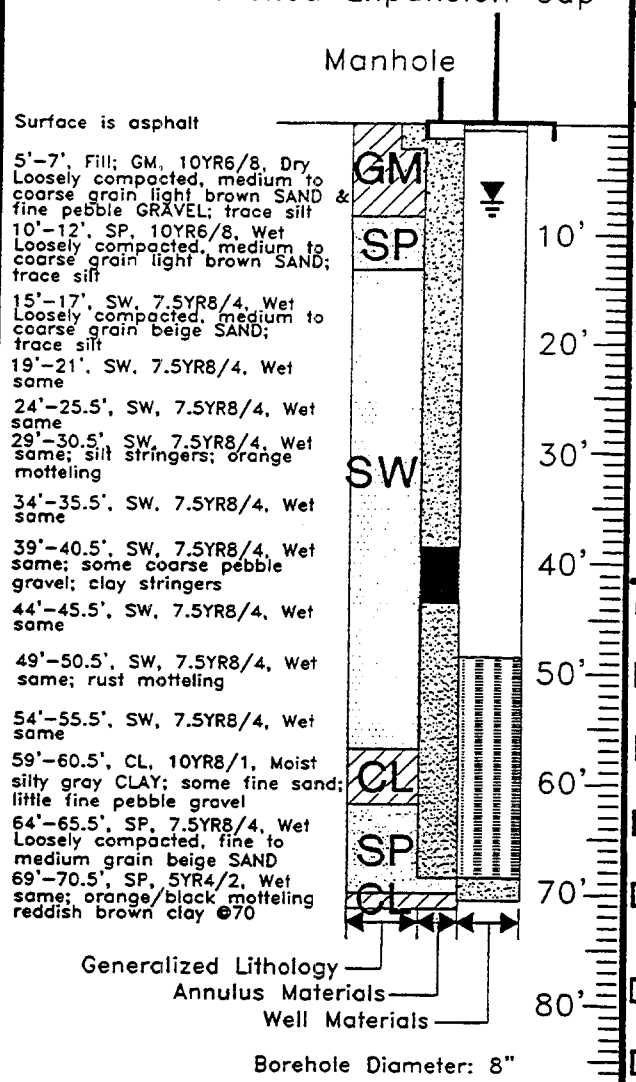
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 49'-69'

SUMP

1, 2"ID
Sch. 40 PVC
and: U.S. Filter
erval: 68.5'-69',

CONSTRUCTION DIAGRAM



USDA ars Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW15
BORING No.: MW15

LOCATION: BARC 6 Biodegradable Site
Approximately 30' East of WMATA Bldg B-the Service and Inspection Shop (NE corner)

MARYLAND STATE PLANE COORDINATES:
492388.3 N
1339107.7 E
LATITUDE/LONGITUDE:
39°01'07.12" N
76°54'20.75" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 05/21/98
END DATE: 05/22/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.0131 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0682

Revised: 09/98 | By: FFC | File: B6_mw15.dwg

ENTECH INC
ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 80.63'
Top of Casing (#1,2,3):
82.29', 82.29', 82.39'
Water Surface on 09-09-98:
79.39', 77.02', 77.59'

SPECIFICATIONS

GROUT

Cement: 188 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 12 gal
Weight: n/a lbs/gal
Interval: 0'-15',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 4 buckets
Brand: POSCo Pel-Plug
Intervals: 15'-20', 59'-64', 89.5'-90.5, 110'-115'

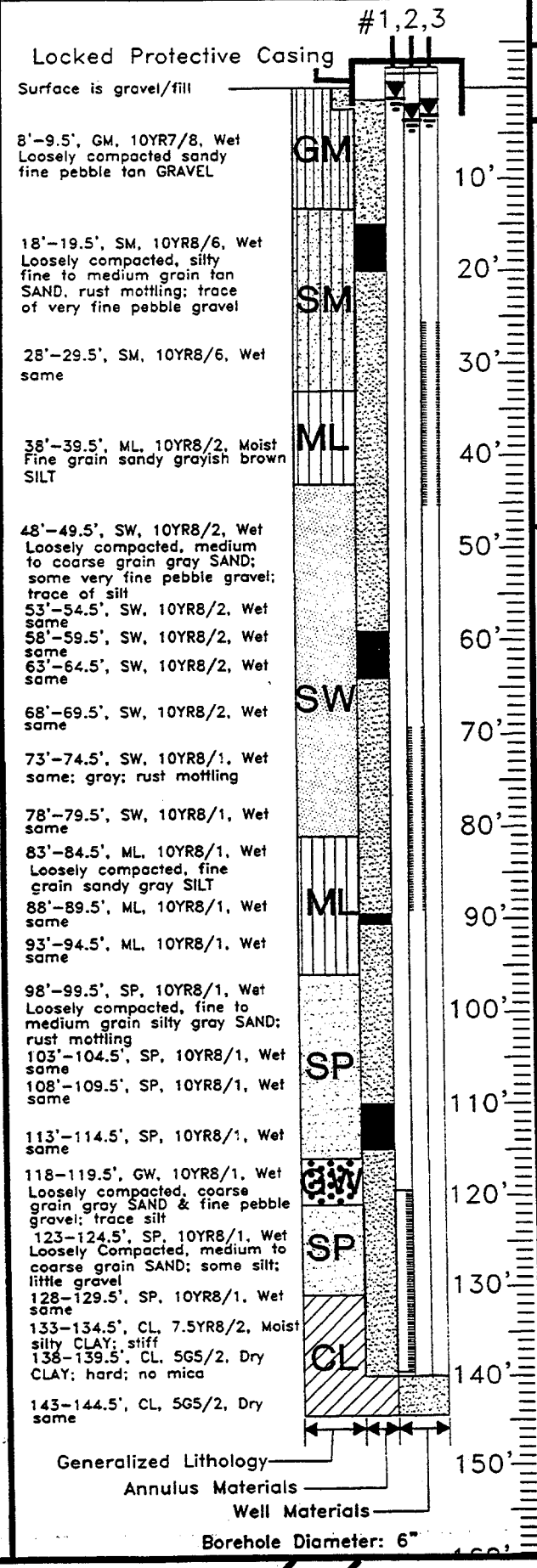
FILTER PACK

Composition: Sand #2
Quantity: 3650 lbs
Brand: Unimin
Intervals: 20'-59', 64'-89.5', 90.5'-110', 115'-140'

Well Pipe Materials

3/4" ID
Brand: U.S. Filter
Schedule 80 (1), 80(2), 40(3) PVC
Riser Length:
120'(1), 69'(2), 25'(3)
Screen Intervals:
25'-45' (3),
69'-89' (2),
120'-140' (1),
Slot: 0.02 inch
Sump Intervals:
44.5'-45' (3),
88.5'-89' (2),
139.5'-140' (1),

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW16
BORING No.: MW16

LOCATION: BARC 6
Biodegradable Site
Approximately 91' North & 451' East of WMATA Bldg B-Service Inspection Shop (NE corner)

MARYLAND STATE PLANE COORDINATES:
492474.4 N
13339503.9 E
LATITUDE/LONGITUDE:
39°01'07.97" N
76°54'15.73" W

GEOLOGIST:
F. Colvais/C. Haggard

DRILLING COMPANY:
GeoServices, Inc.

DRILLER:
R. Stidham

DRILL RIG BRAND:
CME

DRILL RIG MODEL:
850, Track Mounted

DRILLING METHOD:
Mud Rotary

DRILLING FLUID:
Revert

AUGER BIT TYPE:
4.25" Roller Bit

CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 06/22/98
END DATE: 06/26/98

REMARKS:
Split-spoon samples collected every 10' from 0-60', and every 5' from 60'-143'; well #1 has slight pressure

PROJECT No.: 96030-4
PERMIT No.: PG-94-0683

Revised: 09/98 | By: FFC | File: B6_mw16.dwg

ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 86.39'

Top of Casing: 86.13'

Water Surface on 07-15-98: 77.84'

SPECIFICATIONS

GROUT

Cement: 1410 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 90 gal
Weight: n/a lbs/gal
Interval: 0'-40'

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 40'-45'

FILTER PACK

Composition: Sand #2
Quantity: 500 lbs
Brand: Unimin
Interval: 45'-70'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 50'

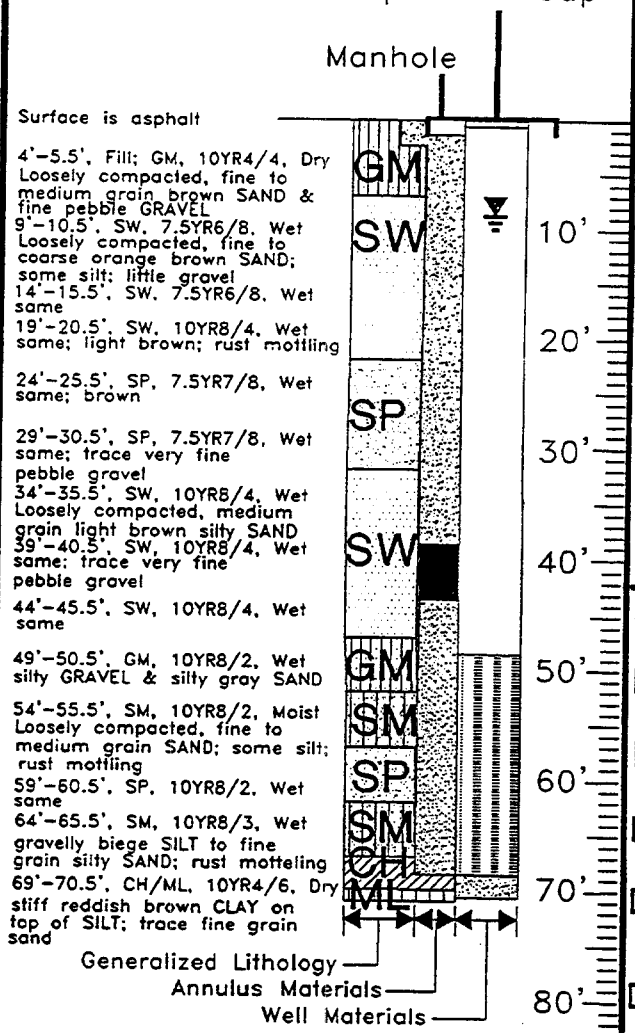
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 50'-70'

SUMP

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Interval: 69.5'-70',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW17
BORING No.: MW17

LOCATION: BARC 6 Biodegradable Site
Approximately 223' West & 370' South of WMATA Bldg B-Service/Inspection Shop (NE corner)
MARYLAND STATE PLANE COORDINATES:
491422.1 N
1338588.1 E
LATITUDE/LONGITUDE:
39°00'57.58" N
76°54'27.34" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 06/10/98
END DATE: 06/11/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.00306 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0693

Revised: 09/98 | By: FFC | File: 86_mw17.dwg

ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/26/98

ELEVATIONS

Ground Surface: 75.55'

Top of Casing: 78.14'

Water Surface on 07-15-98: 74.11'

SPECIFICATIONS

GROUT

Cement: 1363 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 90 gal
Weight: n/a lbs/gal
Interval: 0'-39'

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 39'-44'

FILTER PACK

Composition: Sand #2
Quantity: 500 lbs
Brand: Unimin
Interval: 44'-69'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 49'

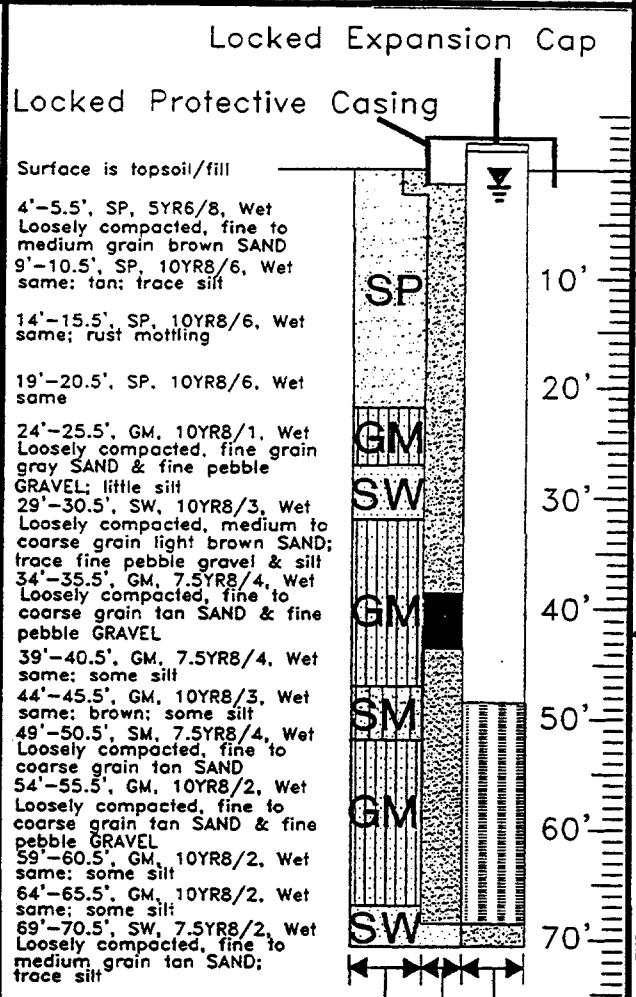
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 49'-69'

SUMP

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Interval: 68.5'-69',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW18
BORING No.: MW18

LOCATION: BARC 6 Biodegradable Site
Approximately 50' NE of WMATA SWM Pond#2 (NE corner)

MARYLAND STATE PLANE COORDINATES:
491696.4 N
1339704.1 E
LATITUDE/LONGITUDE:
39°01'00.28" N
76°54'13.20" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 06/12/98
END DATE: 06/15/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.00759 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0694

Revised: 09/98 | By: FFC | File: B6_mw18.dwg

ENTECH INC
ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 85.84'

Top of Casing: 85.63'

Water Surface on 07-15-98: 77.85'

SPECIFICATIONS

GROUT

Cement: 1410 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 90 gal
Weight: n/a lbs/gal
Interval: 0'-39.5'

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 1.25 buckets
Brand: POSCo Pel-Plug
Interval: 39.5'-44.5'

FILTER PACK

Composition: Sand #2
Quantity: 500 lbs
Brand: Unimin
Interval: 44.5'-69.5'

Riser Pipe

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Length: 49.5'

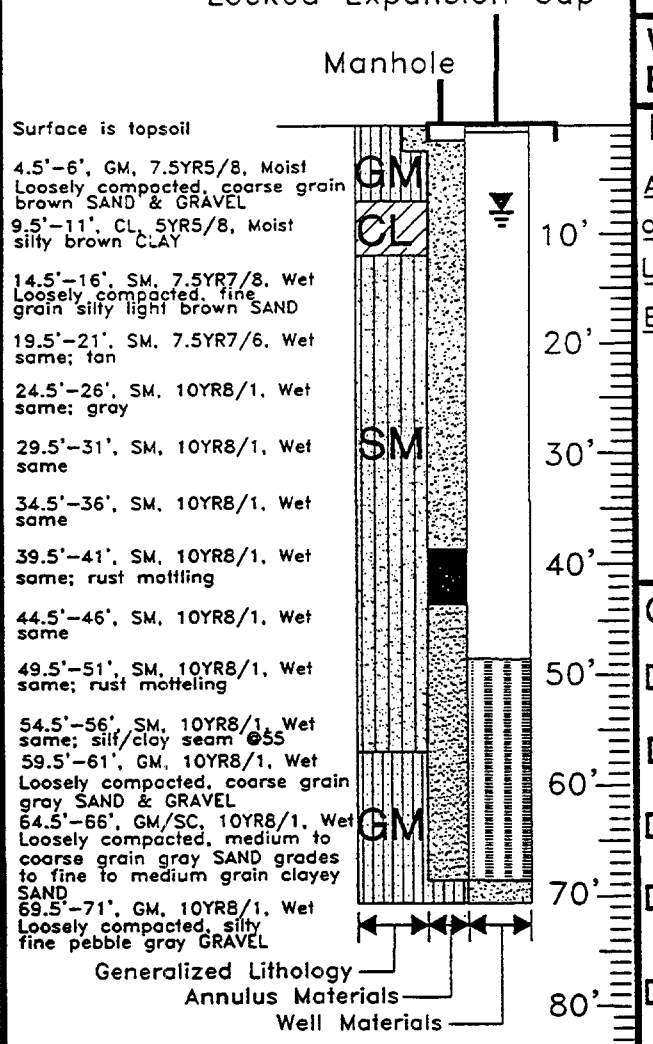
SCREEN

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Slot: 0.02 inch
Interval: 49.5'-69.5'

SUMP

1, 2"ID
Sch. 40 PVC
Brand: U.S. Filter
Interval: 69'-69.5',

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW19
BORING No.: MW19

LOCATION: BARC 6 Biodegradable Site
Approximately 60' North of former College Park Landfill entrance on Edmonston Road

MARYLAND STATE PLANE COORDINATES:
493067.9 N
1340626.7 E
LATITUDE/LONGITUDE:
39°01'13.82" N
76°54'01.49" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: HSA + Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 07/07/98
END DATE: 07/08/98

REMARKS:
Split-spoon samples collected every 5'; Hydraulic Conductivity= 0.00303 ft/min

PROJECT No.: 96030-4
PERMIT No.: PG-94-0695

Revised: 09/98 | By: FFC | File: B6_mw19.dwg

ENTECH INC
ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

ELEVATIONS

Ground Surface: 72.00'
Top of Casing (#1,2,3): 73.98', 74.01', 73.78'
Water Surface on 09-08-98: 73.98', 72.58', 71.55'

SPECIFICATIONS

GROUT

Cement: 376 lbs
Brand: Magnolia
Circle Portland I/II
Gel: 0 lbs
Brand: n/a
Water: 25 gal
Weight: n/a lbs/gal
Interval: 0'-30',

SEAL

Composition: Bentonite 1/4" TR30 Pellets
Quantity: 4 buckets
Brand: POSCo Pel-Plug
Intervals: 30'-35', 84'-89',114'-115', 121'-126'

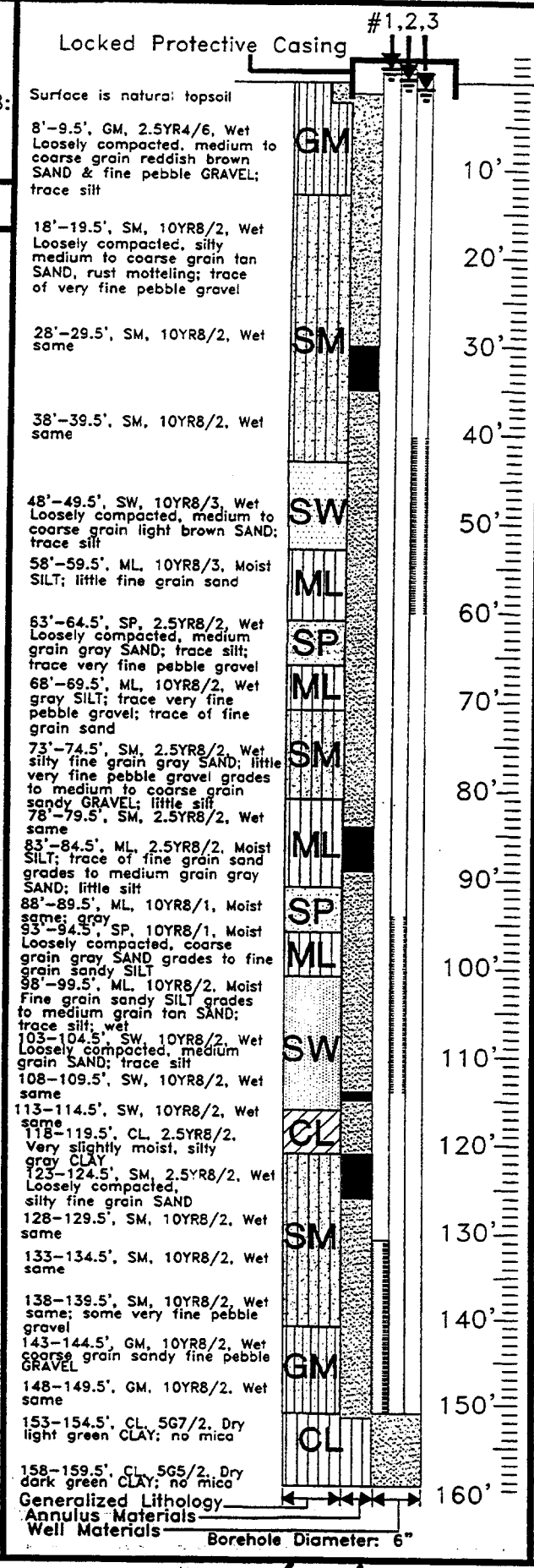
FILTER PACK

Composition: Sand #2
Quantity: 3000 lbs
Brand: Unimin
Intervals: 35'-84', 89'-114',115'-121', 126'-153'

Well Pipe Materials

3/4"ID
Brand: U.S. Filter
Schedule 80 (1), 80(2),40(3) PVC
Riser Length: 131'(1),94'(2),40'(3)
Screen Intervals: 40'-60' (3), 94'-114' (2), 131'-151' (1),
Slot: 0.02 inch
Sump Intervals: 150.5'-151' (3), 113.5'-114' (2), 127.5'-128' (1),

CONSTRUCTION DIAGRAM



USDA ARS Agricultural Research Service
Facility: Beltsville, Maryland

WELL No.: MW20
BORING No.: MW20

LOCATION: BARC 6 Biodegradable Site
Approximately 485' East & 167' South of WMATA Yard Operations. Bldg (SE corner)
MARYLAND STATE PLANE COORDINATES:
490776.5 N
1339670.8 E
LATITUDE/LONGITUDE:
39°01'51.19" N
76°54'13.64" W

GEOLOGIST: F. Colvais/C. Haggard
DRILLING COMPANY: GeoServices, Inc.
DRILLER: R. Stidham
DRILL RIG BRAND: CME
DRILL RIG MODEL: 55, Truck Mounted
DRILLING METHOD: Mud Rotary
DRILLING FLUID: Revert
AUGER BIT TYPE: 4.25" Roller Bit
CENTRALIZERS: n/a
COMPOSITION:
DEPTHS:

START DATE: 06/30/98
END DATE: 07/10/98

REMARKS:
SS samples collected every 10' from 0-60'; every 5' from 60-158'; well #1 is artesian (~1gpm); well #2 is under slight pressure

PROJECT No.: 96030-4
PERMIT No.: PG-94-0696

Revised: 09/98 | By: FFC | File: B6_mw20.dwg

ENTECH, Inc.
7926 Jones Branch Dr.
Suite 620
McLean, VA 22102

CHECKED BY: J. Tuttle DATE: 9/25/98

Project:	Sheet:	Boring Number:	Advantage Environmental Consultants, LLC
W.P. Ballard & Company of Washington, Inc	1 of 1	OMW-26	
Site Location:	Location:	Elevation:	Job Number:
10722 Tucker Street Beltsville, Maryland			06-000
Drill Contractor:	Engineer/Geologist:	Date Begun:	Date Finished:
C. R. Hugo, Inc.	John Merletti	5/28/2008	5/29/2008
Drill Rig/Operator	Weather:	Groundwater (Depth/Elevation):	
Hollow Stem Auger Carl Hugo		2'	
Hole Size (inches):	Drill Method:	Drill Fluid:	
6.25	Hollow Stem Auger Rig	None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Coarse brown sandy gravel			2	0.0	
8-10	Brown clayey sand				0.0	
13-15	White silty sand				0.0	
18-20	White silty sand				0.0	
23-25	White silty sand, angular				0.0	
28-30	Brown angular sand				0.0	
33-35	Brown silty sand				0.0	
38-40	White clayey sand				0.0	
43-45	White sand with trace clay				0.0	
48-50	White clayey sand				0.0	
53-55	White clay and sand				0.0	
58-60	White clay and sand				0.0	
63-65	White clay with angular quartz gravel				0.0	
68-70	Gray clay				0.0	
	Boring ends at 70'					

Project:	Sheet:	Boring Number:	Advantage Environmental Consultants, LLC
W.P. Ballard & Company of Washington, Inc	1 of 1	OMW-27	
Site Location:	Location:	Elevation:	Job Number:
10722 Tucker Street Beltsville, Maryland			06-000
Drill Contractor:	Engineer/Geologist:	Date Begun:	Date Finished:
C. R. Hugo, Inc.	John Merletti	5/26/2008	5/27/2008
Drill Rig/Operator	Weather:	Groundwater (Depth/Elevation):	
Hollow Stem Auger Carl Hugo		10'	
Hole Size (inches):	Drill Method:	Drill Fluid:	
6.25	Hollow Stem Auger Rig	None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Brown coarse sandy gravel				0.0	
8-10	Brown clayey sand			10	0.0	
13-15	Brown silty sand				0.0	
18-20	White silty sand				0.0	
23-25	White silty sand				0.0	
28-30	White silty sand, angular				0.0	
33-35	Brown angular sand				0.0	
38-40	White sand with trace clay				0.0	
43-45	White sand with trace silt				0.0	
48-50	White sand with clay				0.0	
53-55	White sand and clay				0.0	
58-60	White clay and angular sand				0.0	
63-65	White clay with angular quartz gravel				0.0	
68-70	Gray clay				0.0	
	Boring ends at 70'					

Project:	Sheet:	Boring Number:	Advantage Environmental Consultants, LLC
W.P. Ballard & Company of Washington, Inc	1 of 1	OMW-23	
Site Location:	Location:	Elevation:	Job Number:
10722 Tucker Street Beltsville, Maryland			06-000
Drill Contractor:	Engineer/Geologist:	Date Begun:	Date Finished:
C. R. Hugo, Inc.	John Merletti	6/4/2008	6/5/2008
Drill Rig/Operator	Weather:	Groundwater (Depth/Elevation):	
Hollow Stem Auger Carl Hugo		15	
Hole Size (inches):	Drill Method:	Drill Fluid:	
6.25	Hollow Stem Auger Rig	None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Brown sand and gravel				0.0	
8-10	Brown clayey sand sith gravel				0.0	
13-15	Brown/tan silty sand			15	0.0	
18-20	White silty sand				0.0	
23-25	White silty sand				0.0	
28-30	Brown silty sand				0.0	
33-35	Brown silty sand				0.0	
38-40	Brown silty sand				0.0	
43-45	Brown silty sand				0.0	
48-50	White clayey sand				0.0	
53-55	White clay and sand				0.0	
58-60	White clay with quartz gravel				0.0	
63-65	White clay with quartz gravel				0.0	
68-70	gray clay				0.0	
	Boring ends at 70'					

Project:	Sheet:	Boring Number:	Advantage Environmental Consultants, LLC
W.P. Ballard & Company of Washington, Inc	1 of 1	OMW-25	
Site Location:	Location:	Elevation:	Job Number:
10722 Tucker Street Beltsville, Maryland			06-000
Drill Contractor:	Engineer/Geologist:	Date Begun:	Date Finished:
C. R. Hugo, Inc.	John Merletti	5/30/2008	5/30/2008
Drill Rig/Operator	Weather:	Groundwater (Depth/Elevation):	
Hollow Stem Auger Carl Hugo		5'	
Hole Size (inches):	Drill Method:	Drill Fluid:	
6.25	Hollow Stem Auger Rig	None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Brown coarse sandy gravel			5	0.0	
8-10	Brown sandy gravel				0.0	
13-15	Brown clayey sand				0.0	
18-20	Brown clayey sand				0.0	
23-25	White silty sand, angular				0.0	
28-30	White silty sand, angular				0.0	
33-35	Whtie clayey sand				0.0	
38-40	Brown silty sand				0.0	
43-45	White clayey sand				0.0	
48-50	Whtie clayey sand				0.0	
53-55	Whtie clay and sand				0.0	
58-60	White clay with angular quartz gravel				0.0	
63-65	Gray clay				0.0	
	Boring ends at 65'					

Project: W.P. Ballard & Company of Washington, Inc	Sheet: 1 of 1	Boring Number: OMW-22	Advantage Environmental Consultants, LLC
Site Location: 10722 Tucker Street Beltsville, Maryland	Location:	Elevation:	Job Number: 06-000
Drill Contractor: C. R. Hugo, Inc.	Engineer/Geologist: John Merletti	Date Begun: 6/5/2008	Date Finished: 6/6/2008
Drill Rig/Operator Hollow Stem Auger Carl Hugo	Weather:	Groundwater (Depth/Elevation): 12	
Hole Size (inches): 6.25	Drill Method: Hollow Stem Auger Rig	Drill Fluid: None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Brown sandy gravel				0.0	
8-10	Brown sandy clay and gravel				0.0	
13-15	White silty sand			12	0.0	
18-20	White silty sand				0.0	
23-25	White silty sand				0.0	
28-30	Brown silty sand				0.0	
33-35	Brown silty sand				0.0	
38-40	White silt and sand				0.0	
43-45	White sand with trace silt				0.0	
48-50	White clay and sand				0.0	
53-55	White clay and sand				0.0	
58-60	White clay and sand				0.0	Slight solvent odor
63-65	White clay with quartz gravel				0.0	Slight solvent odor
68-70	Gray clay				0.0	
	Boring ends at 70'					

Project: W.P. Ballard & Company of Washington, Inc	Sheet: 1 of 1	Boring Number: OMW-21	Advantage Environmental Consultants, LLC
Site Location: 10722 Tucker Street Beltsville, Maryland	Location:	Elevation:	Job Number: 06-000
Drill Contractor: C. R. Hugo, Inc.	Engineer/Geologist: John Merletti	Date Begun: 6/9/2008	Date Finished: 6/10/2008
Drill Rig/Operator Hollow Stem Auger Carl Hugo	Weather:	Groundwater (Depth/Elevation): 9	
Hole Size (inches): 6.25	Drill Method: Hollow Stem Auger Rig	Drill Fluid: None	

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Brown topsoil, high organics				0.0	
4-5	Brown sandy gravel				0.0	
8-10	Brown silty sand			9	0.0	
13-15	White silty sand				0.0	
18-20	White silty sand				0.0	
23-25	White silty sand				0.0	
28-30	Brown silty sand				0.0	
33-35	Brown silty sand				0.0	
38-40	White silt and sand				0.0	
43-45	White sand with trace silt				0.0	
48-50	White clay and sand				0.0	
53-55	White silty sand				0.0	
58-60	White clay with gravel				0.0	
63-65	White clay				0.0	
	Boring ends at 65'					

Project:	Sheet:	Boring Number:	Advantage Environmental Consultants, LLC
W.P. Ballard & Company of Washington, Inc	1 of 1	OMW-24	
Site Location:	Location:	Elevation:	Job Number:
10722 Tucker Street Beltsville, Maryland			06-000
Drill Contractor:	Engineer/Geologist:	Date Begun:	Date Finished:
C. R. Hugo, Inc.	John Merletti	6/11/2008	6/12/2008

Drill Rig/Operator	Weather:	Groundwater (Depth/Elevation):
Hollow Stem Auger Carl Hugo		9
Hole Size (inches):	Drill Method:	Drill Fluid:
6.25	Hollow Stem Auger Rig	None

Depth (feet)	Soil Classification	Depth of Sample (feet)	Sample Type	Groundwater depth (feet)	PID Reading (ppm)	Comments
0-1	Grass/topsoil				0.0	
4-5	Brown gravelly sand				0.0	
8-10	Brown sand with gravel			9	0.0	
13-15	Brown silty sand				0.0	
18-20	Brown silty sand				0.0	
23-25	Brown silty sand				0.0	
28-30	White silty sand				0.0	
33-35	Brown sand with gravel				0.0	
38-40	White sand with clay				0.0	
43-45	Brown sand				0.0	
48-50	White clay and sand				0.0	
53-55	White silty sand				0.0	
58-60	White clayey sand				0.0	
63-65	White clay with quartz gravel				0.0	
68-70	Gray clay				0.0	
	Boring ends at 70'					

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

WELL ID: OMW-21

DATE BEGUN: 6/10/08
DATE FINISHED: 6/10/08

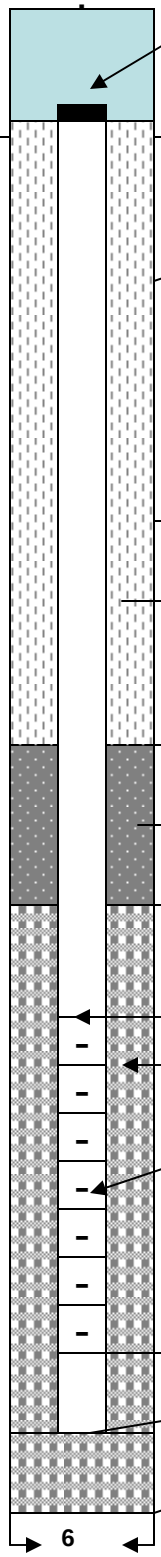
Reference Points & Elevations

TOP OF SURFACE CASING (ft):____

TOP OF RISER CASING (ft):

GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 65
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	4	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	7	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	64.5	
BOTTOM OF SUMP (FT):	64.75	
BOTTOM OF HOLE (FT)	65	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

WELL ID: OMW-22

DATE BEGUN: 6/6/08
DATE FINISHED: 6/6/08

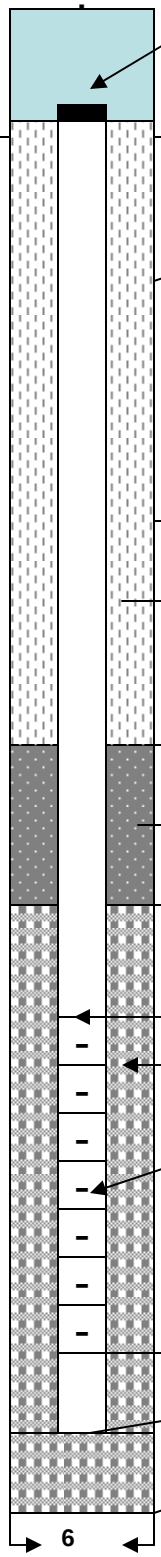
Reference Points & Elevations

TOP OF SURFACE CASING (ft):____

TOP OF RISER CASING (ft):

GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	6	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	8	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	69.5	
BOTTOM OF SUMP (FT):	69.75	
BOTTOM OF HOLE (FT)	70	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

WELL ID: OMW-23

DATE BEGUN: 6/5/08
DATE FINISHED: 6/5/08

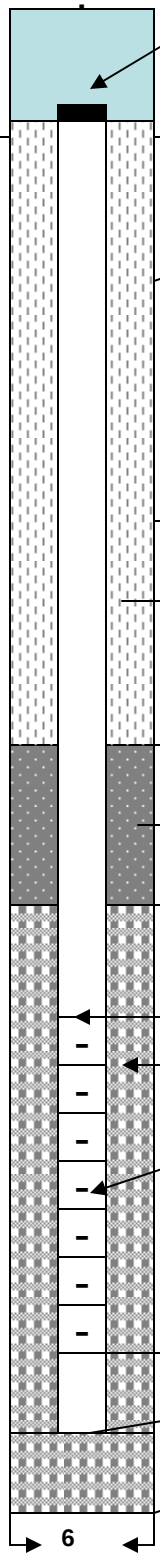
Reference Points & Elevations

TOP OF SURFACE CASING (ft):____

TOP OF RISER CASING (ft):

GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	5	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	8	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	69.5	
BOTTOM OF SUMP (FT):	69.75	
BOTTOM OF HOLE (FT)	70	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

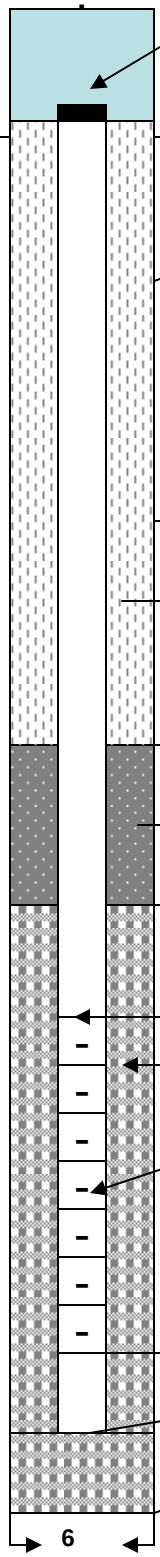
WELL ID: OMW-24

DATE BEGUN: 6/12/08
DATE FINISHED: 6/12/08

Reference Points & Elevations

TOP OF SURFACE CASING (ft):____
TOP OF RISER CASING (ft):
GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	4	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	7	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	69.5	
BOTTOM OF SUMP (FT):	69.75	
BOTTOM OF HOLE (FT)	70	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

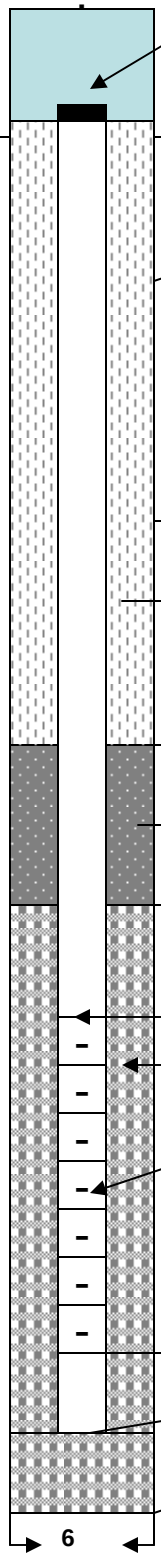
WELL ID: OMW-25

DATE BEGUN: 5/30/08
DATE FINISHED: 5/30/08

Reference Points & Elevations

TOP OF SURFACE CASING (ft):____
TOP OF RISER CASING (ft):
GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	5	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	7.5	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	64.5	
BOTTOM OF SUMP (FT):	64.75	
BOTTOM OF HOLE (FT)	65	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#:
06-000

Advantage Environmental Consultants, LLC

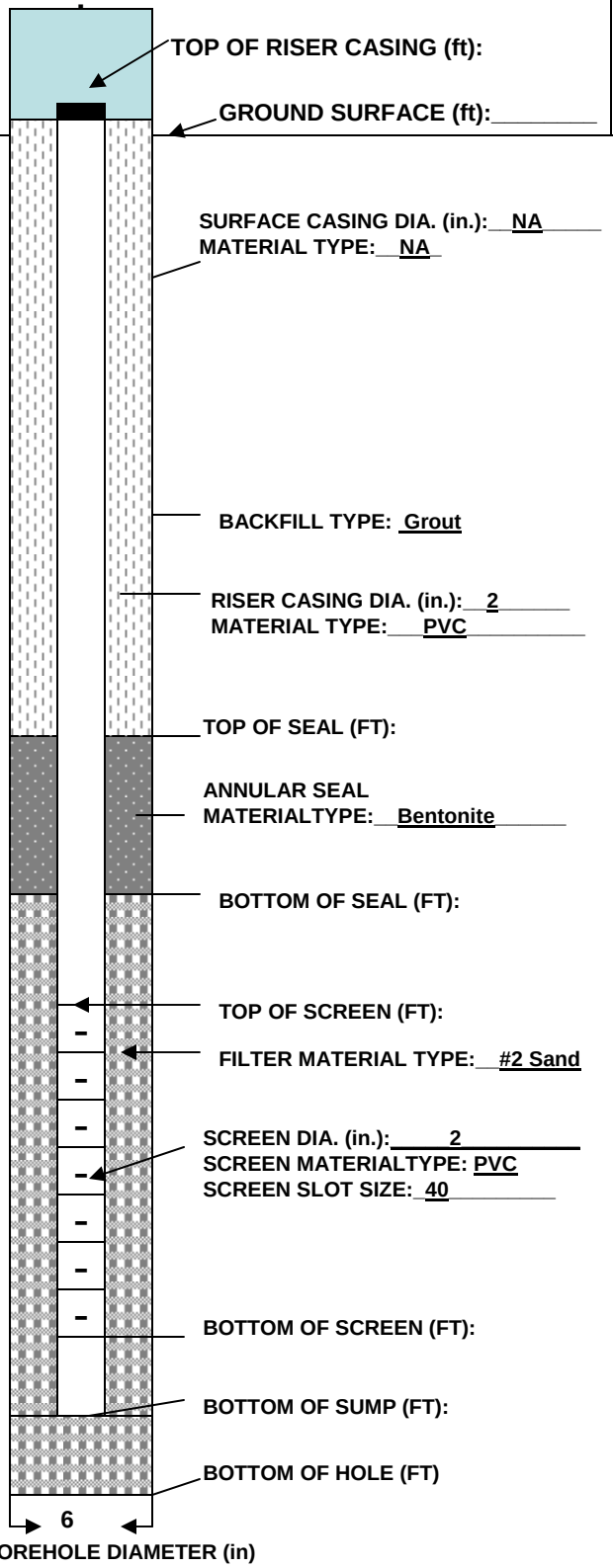
DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

WELL ID: OMW-26

DATE BEGUN: 5/29/08
DATE FINISHED: 5/29/08

Reference Points & Elevations

WATER LEVEL (ft):
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



DEPTH (ft)	ELEV. (ft)
6	
8	
10	
69.5	
69.75	
70	

DATE DEVELOPED:

METHOD DEVELOPED: Surge Block

Monitoring Well Installation Report

W.P. Ballard Company of Washington, Inc.
10722 Tucker Street, Beltsville, MD

PROJECT #: TASK#: 06-000

Advantage Environmental Consultants, LLC

DRILLINGCONTRACTOR: C.R. Hugo
AEC SUPERVISOR: John Merletti

WELL ID: OMW-27

DATE BEGUN: 5/28/08
DATE FINISHED: 5/28/08

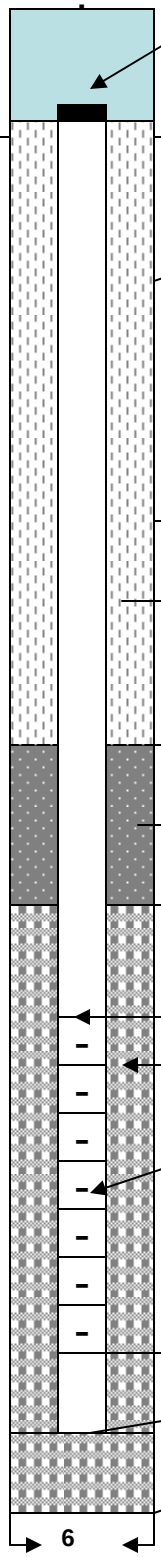
Reference Points & Elevations

TOP OF SURFACE CASING (ft):____

TOP OF RISER CASING (ft):

GROUND SURFACE (ft):_____

WATER LEVEL (ft):)
DEPTH OF WELL (ft): 70
DRILLING METHOD: HSA



	DEPTH (ft)	ELEV. (ft)
SURFACE CASING DIA. (in.): NA MATERIAL TYPE: NA		
BACKFILL TYPE: Grout		
RISER CASING DIA. (in.): 2 MATERIAL TYPE: PVC		
TOP OF SEAL (FT):	4	
ANNULAR SEAL MATERIALTYPE: Bentonite		
BOTTOM OF SEAL (FT):	7	
TOP OF SCREEN (FT):	10	
FILTER MATERIAL TYPE: #2 Sand		
SCREEN DIA. (in.): 2 SCREEN MATERIALTYPE: PVC SCREEN SLOT SIZE: 40		
BOTTOM OF SCREEN (FT):	69.5	
BOTTOM OF SUMP (FT):	69.75	
BOTTOM OF HOLE (FT)	70	

6
BOREHOLE DIAMETER (in)

DATE DEVELOPED:_

METHOD DEVELOPED: Surge Block

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